

VOL. 8, No 1

JANUARY 1954

CHRONICLE OF THE WORLD HEALTH ORGANIZATION

RESISTANCE OF INSECTS TO INSECTICIDES
FIRST INTERNATIONAL CONFERENCE OF NATIONAL COMMITTEES
ON VITAL AND HEALTH STATISTICS
SANITATION IN RURAL AREAS
PERINATAL MORTALITY
AFRICAN CONFERENCE ON NURSING EDUCATION
SEAFARERS AND VENEREAL DISEASE
TYPHUS CONTROL IN GUATEMALA AND MEXICO
STATISTICAL PROGRAMME OF THE PAN AMERICAN SANITARY BUREAU

REVIEW OF WHO PUBLICATIONS
NOTES AND NEWS
VIEWS ON WHO



WORLD HEALTH ORGANIZATION
PALAIS DES NATIONS
GENEVA

The World Health Organization (WHO) is a specialized agency of the United Nations and represents the culmination of efforts to establish a single intergovernmental health agency. As such it inherits the functions of antecedent organizations such as the Office International d'Hygiène Publique, the Health Organization of the League of Nations and the Health Division of UNRRA.

WHO had its origin in the proposal made at the United Nations Conference held in San Francisco in 1945 that a specialized agency be created to deal with all matters relating to health. In 1946 representatives of 61 governments met at the International Health Conference. New York drafted and signed the WHO Constitution and established an Interim Commission to serve until the Constitution could be ratified by 26 Member States of the United Nations. The Constitution came into force on 7 April 1948; the first World Health Assembly met in Geneva in June 1948 and on 1 September 1948 the permanent Organization was established.

The work of the Organization is carried out by three organs: the World Health Assembly, the supreme authority to which all Member States send delegates; the Executive Board, the executive organ of the Health Assembly consisting of 18 persons designated by as many Member States; and a Secretariat under the Director General.

The scope of WHO's interests and activities exceeds that of any previous international health organization and includes in addition to major projects relating to malaria, tuberculosis, venereal diseases, maternal and child health, nutrition and environmental sanitation, special programmes on public health administration, epidemic diseases, mental health, professional and technical training and other public-health subjects. It is also continuing work begun by earlier organizations on biological standardization, unification of pharmacopoeias, addiction-producing drugs, health statistics, international sanitary regulations and the collection and dissemination of technical information including epidemiological statistics.

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Subscription for 1954	17/6	\$2.50	Sw fr	10.—
Price per copy	1/9	\$0.25	Sw fr	1.—

A specimen number will be sent free of charge on request.



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SCHEDULE OF MEETINGS

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| 7-13 January | Study Group on the Psychobiological Development of the Child second conference London |
| 12 January | Executive Board, thirteenth session Geneva |
| 20 January
5 March | International Exhibition on Low Cost Housing New Delhi |
| 22-27 February | Seminar on Meat Hygiene Copenhagen |

RESISTANCE OF INSECTS TO INSECTICIDES

During the last six years residual insecticides have brought about a spectacular decrease in the ravages of insect borne diseases. In certain countries public health problems which only a short time ago were acute and distressing have been relegated to the background. It was even possible to believe that they had been finally overcome.

However the hopes to which the use of chlorinated derivatives of the cyclic hydrocarbons (DDT type) gave rise are now threatened. For several years in fact resistance of certain insects to chemical compounds of this group has been reported from various parts of the world.

Without being alarming the position is serious enough to have called for careful examination and in the light of the facts discovered, for the drafting of research plans and programmes of action for the future. For this purpose the WHO Regional Office for Europe organized in collaboration with the Istituto Superiore di Sanità, Rome, a symposium on the control of insect vectors of disease. The symposium was held in Rome from 26 to 31 October 1953 and 28 experts from 11 countries participated. Most of the papers were directly or indirectly connected with the question of the resistance of insects to insecticides.

Development of Resistance

In 1947 the resistance of domestic flies was observed for the first time in the Pontine marshes (Italy). This resistance has since spread to compounds other than DDT so that in 1950-1 it had become general, applying to chlordane, aldrin and methoxychlor as well as DDT. In 1951 the treat-

ment applied against anophelines in Latium had no effect on the flies there. This phenomenon has not remained confined to one country only. Resistance has also been reported from various other parts of the world and may now be considered as universal.

This fact has immediate practical and psychological consequences. Thus for example we must not expect to see the same rate of fall as in recent years in the incidence of infant diarrhoea and dysentery diseases which can be transmitted by flies and which had been receding in a striking manner. From the psychological viewpoint more over there can be no doubt that malaria control was accepted, supported and encouraged by the population in most countries because it also resulted in the destruction of flies, bed bugs, lice and cockroaches with the failure of chlorinated insecticides in the destruction of certain insects. The interest of the public will probably wane in certain regions. Among malaria vectors resistance has not so far developed to the point of compromising the success of control measures. It has been reported among eight species of malaria vectors. The species which at present have the highest resistance are the salt marsh mosquitos (*Aedes sollicitans* and *A. taeniorhynchus*) and in California, *Culex tarsalis* the encephalitis vector. At least five species of fleas including *Pulex irritans* have become DDT resistant. Lice have also become resistant to DDT as observed recently in Korea and Egypt but they are still sensitive to other chlorinated hydrocarbon insecticides. *Triatoma* the vector of Chagas disease in America has also developed resistance.

However this list may give too dark a

picture of the present situation. Apart from the domestic fly and possibly two or three species of mosquito, the dangerous species are still sensitive to one or another of the main insecticides now available. Their resistance to these substances will probably develop gradually. Advantage must be taken of the time available to provide for other control methods, to develop new, active compounds, and to elucidate the mechanism of resistance, which is the only way in which to get beyond empirical measures.

General improvements, sanitation

The partial failure of control with insecticides has resulted in renewed interest in the basic control procedures consisting of "making life impossible" for insects, by sanitation of places where flies multiply such as stables and cowsheds, and by doing away with their potential breeding places such as manure heaps or spread manure, or by draining off stagnant water where mosquitos lay their eggs.

There is no doubt that the indiscriminate use of DDT has helped to hasten the appearance of resistance. Care should be taken that insecticides are employed with discrimination and that control measures against larvae and adults are not undertaken simultaneously in the same place.

Biological control

This method, which consists of making use of the natural enemies of the insects which are to be destroyed, has not been sufficiently investigated in mosquito control. However, the success of biological control in the case of the alfalfa caterpillar in California (where a parasitic virus is sprayed on the plants) and against the fly responsible for European pine saw in Canada by means of a specific virus is encouraging. Variable results have been obtained by the introduc-

tion of *Gambusia* fish which eat mosquito larvae, into rice fields.

New insecticides

Research among the group of compounds inhibiting certain enzymes indispensable for insect metabolism has led to the development of insecticides based on cholinesterase blocking phosphoric esters. Their residual action is inferior to that of DDT, their toxicity for man is higher, and they are more expensive, which results in a double disadvantage since more frequent spraying is called for than with DDT. Compounds of this group which are relatively little toxic for man and the higher animals have been produced and used for several years but their application is still limited. Insects have not developed resistance to these substances, which bring about irreversible changes in their metabolism.

Laboratory experiments have been made with monoiodoacetic acid which inhibits certain enzymes which produce glycolysis in the tissues of insects, leading to paralysis and death.

For a proper orientation of research the phenomenon of resistance must be analysed: how resistance is built up and what are the means of defence of insects must be determined. Experiments have been under way for several years on this and the few results they have led to are encouraging.

Mechanism and Transmission of Resistance

The mechanisms by which the insect escapes the action of toxic compounds and transmits resistance to its descendants are numerous, and the physiological biochemical and genetical processes involved are only incompletely known. Moreover, the intoxication mechanism itself is still unknown. It is agreed that DDT has a toxic effect on the nervous system but it is possible that DDT itself may not be the active neurotoxin but may

merely induce its production in the organism. It produces instability of the nervous system and renders it abnormally receptive to various types of excitation. It would seem that resistance may develop even in the neuron or the sensory cell which can then tolerate abnormal amounts of DDT.

Despite the considerable difficulty of such research it has been established that the insect defends itself by detoxication by reducing the rate of absorption of toxic compounds and by storing large amounts of insecticide in the tissues.

Certain resistant insects enzymatically decompose toxic compounds particularly chlorinated compounds and transform them into harmless metabolites. (The enzyme responsible has been isolated from several strains of flies and partially purified.) Thus DDT is transformed into DDE, a non toxic ethylene derivative. This detoxication in the insect organism does not follow any single or simple scheme but involves complex and varied biochemical reactions.

The absorption rate and permeability may be reduced in resistant individuals sometimes by a change in the properties of the integument the tracheal lining or even the nerve surface these characteristics may be linked genetically with other forms of resistance.

The resistant insect can also store without harm in certain tissues or on certain chemical groups such as the lipids doses which would be toxic for sensitive insects.

These various processes are not mutually exclusive. They may co-exist in the same strain or even in the same individual. From the practical viewpoint the search for inhibitors of enzymatic detoxication which is already under way can if successful solve only one aspect of the problem since other processes are involved.

Genetical investigation first undertaken with flies is equally difficult. The concept of "resistance" is complex and to be properly understood must be broken down into

its component elements. It was seen at the outset that "knock-down" is distinct from fatal poisoning and the complexity is aggravated by the fact that the genetics of the normal fly are still little known. Research workers are agreed that the domestic fly is highly polymorphous and heterozygous it is consequently subject to mutations making it suited to selective adaptation. Mutation leads to the simultaneous modification of several factors which may not all be favourable to the survival of the insect—a fact of practical importance. "Knock-down" and poisoning depend on different genes. The first seems to be a Mendelian factor the second a characteristic dependent on several genes. In the fly neither the cytoplasmic factors nor the sex chromosomes seem to play a part in resistance. Furthermore it has been found that resistance is not acquired to all insecticides in the same chemical group. Recent research has shown that in several strains of flies resistance to BHC to chlor dane and to lindane is independent of DDT resistance. Nothing definite can yet be said as regards the dominant or recessive nature of the factors causing resistance since experiments have given indefinite or contradictory results.

Future Research

The present lack of knowledge concerning the intoxication mechanism and resistance in insects has already been gone into and it now only remains to indicate the following fields in which research needs to be carried out.

- (a) physiology of normal insects
- (b) analysis of the intoxication and death mechanisms with insecticides in widespread use
- (c) analysis of mechanisms leading to resistance (break down of toxic into non toxic

substances, storage of DDT in the tissues), and of the action of synergists, and

(d) development of new insecticides to which resistance is less readily acquired (phosphoric esters, pyrethrins, allethrins)

Role of WHO

In their report¹ the participants in the symposium expressed the wish that WHO should assume a co-ordinating role by

1 collecting and disseminating scientific information and the results of specialist research particularly on methods making it

¹ The Report on the symposium will be published at a later date in the *World Health Organization Technical Report Series*

possible to detect resistance in insects epidemiological importance at the earliest possible stage,

2 encouraging specialized institutions and laboratories in different countries to carry out tests on the new insecticides before they are utilized on a large scale so that development of resistance to them may be assessed,

3 stressing the worldwide importance of the resistance problem in epidemiology encouraging research that will ensue throughout the world, that measures insect vectors—which have given such misleading initial results and which cannot be relaxed—are effectively maintained

International Certificates of Vaccination against Yellow Fever

In a supplement to the WHO *Weekly Epidemiological Record* No. 357 the arrangements are given for the issue of international certificates of vaccination against yellow fever. This publication which gives the situation as on 30 October 1953 lists the centres designated by the responsible health administrations in 118 countries and territories for the issue of valid certificates, the yellow fever vaccines approved by WHO, the stations approved by WHO for testing the activity of yellow fever immunizing vaccines, and the laboratories and institutes approved by WHO for the issue of international certificates of immunity against yellow fever under the terms of the International Sanitary Convention of 1944.

First International Symposium on Yaws Control

The September 1953 issue of the *Tropical Diseases Bulletin* opens with an eight page review by C. J. Hackett of the collection of papers read at the First International Symposium on Yaws Control, Bangkok, 1952 which was published in a recent number of the WHO *Monograph Series*.

This symposium—explains the Director of the Bureau of Hygiene and Tropical Diseases, London, in an introductory paragraph—was so important an event in the history of yaws that Dr. Hackett was invited to review the published account of it at length. The published report contains much detailed information and much discussion of important principles and readers are strongly advised to consult the original.

The reviewer concludes: This is one of the major publications on yaws and should be studied by all concerned with preventive medicine in areas where yaws is endemic and by all responsible for yaws control measures. The Symposium should come to mark a new era in tropical rural health which has been in being by the effective co-operation of national and international activities.

World Health Organization Monograph Series No. 15 iv+418 pages 32 plates price 22/6 \$4.50 Fr. f. 1440—Sw. f. 1440
Mixed language edition contains 6 articles in English and French with summaries in both languages

FIRST INTERNATIONAL CONFERENCE OF NATIONAL COMMITTEES ON VITAL AND HEALTH STATISTICS

The First International Conference of National Committees on Vital and Health Statistics convened under the auspices of the World Health Organization in close collaboration with the United Nations was held from 12 to 17 October 1953 at the General Register Office Somerset House London. It was attended by delegations from 28 Member States and Associate Members of WHO and by representatives of the International Labour Office and the International Statistical Institute.

The Right Honorable Iain Macleod Minister of Health for England and Wales reviewed the history of the General Register Office and in this connexion alluded to the appointment of Farr saying "What was decisive from the point of view of this Conference was the Registrar General's selection in 1838 of Dr William Farr as Medical Assistant the first medical man I think employed by our Government." He interpreted the choice of Somerset House as the venue of the Conference as an international tribute to the work done on vital and medical statistics by the General Register Office and by Farr in particular. He went on to say that just as diagnosis was a necessary precedent to medical treatment so statistics were the necessary foundation for the work of national and international health organizations. It was a matter of national choice what method should be used for collecting vital and health statistics and not all countries followed the same pattern that adopted in the United Kingdom might appear odd and even illogical to other countries but at least it worked. The Conference would allow delegates from all over the world to make a comparative study of methods in

use and would thus assist in improvements in the method of collecting statistics.

The first International Conference on the Classification of Health and Vital Statistics he continued had been held in 1893 and had embodied in its conclusions the principles on which Dr Farr had worked from 1838 to 1880. The system of international classification then adopted had been amended six times since and one of the objects of the present Conference was to determine if the classification adopted in 1948 was still adequate. Both the collection and the classification of statistics were directed towards their use and no policy decisions could be taken by persons responsible for the health of the people without them. Even from the lay point of view it was fascinating to watch the rise and fall of curves showing the increase and decrease of diseases.

Sir Walter Russell Brain President of the Royal College of Physicians who had been appointed Honorary President of the Conference by the host Government stressed in his address¹ the historical importance of the Conference the first international one of National Committees dealing with Vital and Health Statistics and commented on the new wider conception which had inspired the holding of the meeting.

The Conference unanimously elected Professor A Bradford Hill of the London School of Hygiene and Tropical Medicine as Chairman. Professor Stefano Somogyi of the Central Statistical Institute Rome and Dr N. Vejjavisti, Director General of the Department of Medical Service of the

¹ The first of the presidential addresses delivered by Sir Walter Russell Brain, see p. 10.

Ministry of Public Health Thailand, were elected Vice Chairmen

The objectives of the National Committees on Vital and Health Statistics which had been established in some 30 countries after the Sixth Decennial Revision Conference of the International List of Diseases, Injuries and Causes of Death in 1948 were then reviewed and it was recommended that any government which had not yet fully considered the formation of such a committee, or its equivalent should study the practicability of doing so. WHO should not only circulate the information received from National Committees but also point to significant developments in vital and health statistics in the different countries.

Realizing that the collection and elaboration of national vital and health statistics had to be adapted to the degree of social and administrative development of each country, the Conference considered separately the types of statistics which would be of the greatest practical value in areas where health and statistical services had reached a high degree of development, where they were still in a primitive condition, or where they had reached an intermediate stage.

As to the first of these the Conference recommended the application wherever possible of the *Principles for a Vital Statistics System* already approved by the Economic and Social Council of the United Nations. On population statistics, it recommended that detailed decennial censuses be carried out and that population estimates be made in intercensal years. Where intra-national migrations took place quinquennial censuses might be envisaged, if necessary, on a less detailed basis than the decennial ones.

Even in countries where civil registration was practically complete records were often deficient regarding the social, occupational, and economic characteristics of the individuals concerned in birth and death registration. Since it was undesirable to compli-

cate the work of registrars by increasing unduly the number of questions on birth and death certificates, the Conference felt that studies of such characteristics could if necessary, well be carried out by special sampling investigations. Indeed the Conference devoted considerable attention to the possible advantages to be derived from the use of modern sampling techniques which while they could not be expected to solve all the problems of vital and health statistics nevertheless often offered a means of obtaining reliable statistical information in many cases more cheaply and quickly than by conventional methods. Their use in countries without highly developed statistical systems offered particular promise, allowing for a fuller utilization of the limited resources available.

The Conference recognized that statistics on the causes of death were one of the most important elements of health statistics and often served as a main basis for drawing up health policies. Although much progress had recently been made there was still room for improvement, particularly as to the accuracy of the diagnosis of the cause of death. There was frequently more than one cause of death and contributory causes should be recorded. In this respect, a considerable advance could be made by the universal adoption of the international form of medical certificate of cause of death recommended by WHO.²

At the same time, however, it was recognized that statistics of causes of death did not meet all the needs of health planning and research and had to be supplemented by accurate morbidity statistics. Although notification of communicable diseases represented in most countries a small part of the true morbidity, they had an important public health significance and should not be neglected. But as the completeness of

² See Ch. on Wld Hlth Org 1952 6 35

notifications depended far more on an understanding by the medical profession of their value to patient and community than on the legal compulsion exercised to obtain them. The Conference felt it desirable that health administrations should revise the existing lists of notifiable diseases with that consideration in mind.

Where health and statistical services were underdeveloped, constant efforts should be made in those areas such as main towns in which registration of births and deaths was compulsory to improve the completeness of the details recorded as to causes of death and where full information could not readily be obtained on the health conditions of the population by the fixed administrative machinery. Medical surveys should be organized, possibly with the use of mobile medical teams. Wherever compulsory registration could not be introduced, the demographic surveys should be made on a much wider scale than the medical ones.

The Conference also considered methods for improving the quality of health and related vital statistics, amply dealing in this respect with the problems of confidentiality of records. It was felt that the problem of the relationship between the necessity

not to maintain confidentiality in some instances—such as the case of patients incurring a communicable disease—and the traditions and legal requirements in many countries needed further study which could best be carried out by WHO. The Conference also considered that in order to ensure accuracy and precision in vital and health statistics there was definite value in giving undergraduate medical students formal instruction in elementary statistical methods and in the principles and purposes of medical certification of causes of death. A more immediate improvement in statistics, however, was likely to be obtained by efforts to instruct practising medical practitioners in statistical purposes and methods.

On the training of statistical personnel the Conference noted with satisfaction the co-operation between the United Nations and WHO in carrying out training activities in health and vital statistics and recommended that National Committees on Vital and Health Statistics assist in securing the training of statistical staff for their own countries. The Conference also considered what promotional and other measures could be taken to increase public and professional appreciation of the value of health statistics.

The Rural Hospital

The most recent number (No. 21) in the *World Health Organization Monograph Series* is *L'Hôpital rural sa structure et son organisation* by R. F. Bridgman. This monograph, of which an English edition is in preparation, describes the role of the rural hospital, gives blueprints for its construction, and outlines the method of its functioning. It also contains information concerning rural hospitals in various parts of the world, with emphasis on the less-developed countries.

World Health Day 1954

As the year 1954 marks the centenary of Florence Nightingale's pioneer work in nursing and sanitation, World Health Day 1954—which as in previous years will be observed on 7 April—will be consecrated to the theme of nursing and its significance for health in the modern world. The phrase which has been suggested to embody this theme is "The Nurse—Pioneer of Health."

Ministry of Public Health, Thailand, were elected Vice Chairmen

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this From a broader standpoint, population trends which constitute one of the most important factors which have to be taken into account by international statesmanship today require accurate statistics for their calculation

These facts of course are familiar to you all and you will not be disposed to underestimate the difficulties which face us when we seek to make our governments our medical professions and indeed the public in general more aware of the importance of vital statistics of the need for uniformity in this field and of the fundamental necessity for accuracy in the data. Let me briefly consider these questions in their reverse order. It is obvious that the causes to which death is attributed must fall far short of complete accuracy in all countries. A post mortem examination is nowhere performed in more than a small proportion of cases and even that may need to be supplemented—for example by bacteriological studies. Accuracy should be improved as more and better diagnostic methods become available and particularly as members of the medical profession are educated to realize the importance of vital statistics. The confidentiality of information acquired by a doctor about his patient constitutes a genuine problem. Wide differences in this respect exist between different countries. In this country the medical profession with the encouragement of the Royal Colleges has felt free for over a century to report the cause of death upon a certificate which becomes available to the general public. I am sure that progress in this sphere will be made only by taking full account of the feelings of the profession in different countries and you will be discussing what safeguards it is possible to introduce. Full safeguards are likely in themselves to increase the accuracy of the records.

The need for uniformity needs no emphasis and you will be considering how far it is practicable to go in this direction. You may well think it a wise policy for the time being to aim at obtaining uniformity in a comparatively small field rather than to attempt more than it is at present practicable to obtain.

It is rather widely believed that vital statistics are dull and it is important that we should succeed in dispelling this idea. I have often reflected on the fact that preventive medicine seems somehow to lack glamour. The novelist or the author of a film scenario may show you the great surgeon peeling off his rubber gloves after removing the appendix or the psychiatrist administering to his patient an electric shock but somehow he does not find romance in the medical officer of health bringing a typhoid epidemic to an end or in the vital statistician studying the number of deaths from carcinoma of the lung.

It is of fundamental importance to arouse or increase the interest of governments doctors and the public in all countries in vital statistics for without this better technical methods by themselves can achieve little. It is undeniable that at present neither vital statistics nor even public health and preventive medicine excite the interest which their importance deserves and needs and if we are to change the public attitude to them, we must first try to discover why this is so.

Let us consider first the attitude of the medical profession since in a sense the doctors are the key to the situation partly because their direct help is essential and partly because they are the natural propagandists for preventive medicine with unique opportunities of obtaining the ear both of peoples and of governments. It might be thought that doctors who spend their lives dealing with the results of disease could be equally active in the sphere of preventive medicine yet experience shows that this is not necessarily the case. It has to be remembered, first that doctors who devote themselves chiefly to treatment usually have little time for much else and secondly that the man or woman who is by temperament attracted

AN HISTORIC OCCASION

Presidential Address to the First International Conference of National Committees on Vital and Health Statistics

Sir Walter Russell BRAIN, M D LL D, P R C P

The opportunity of being present on an historic occasion does not come very often, but I believe that we here today are making history, and that the date of this First International Congress of National Committees on Vital and Health Statistics promoted by the World Health Organization, will be remembered as one which saw the first embodiment in form and action of a new idea which is to prove of the utmost importance for the future of medicine and indeed I can say without exaggeration, of mankind. I call it a new idea, but perhaps it would be not inappropriate to speak of it as a new conception for it is no mere chance that in English we use the same word to describe both the birth of an idea and the origin of a new life. Human societies whatever else they may be are certainly biological organizations. Philosophers spend a good deal of time today discussing the body mind relationship but they nearly always mean by that the relationship between one particular mind and the body with which it is associated. Sociologists, however and others who concern themselves with the ideas which move and change societies are equally dealing with an aspect of the body mind relationship, for it is certain that new ideas can influence society only in so far as they are embodied in its individual members. So when I speak of this meeting as being in a double sense a conception I am speaking not metaphorically but literally. The new human individual possesses only two parents but social structures are more complex in certain respects, and today a new idea has been brought to birth owing to the vision and enthusiasm of workers in many countries in all parts of the world.

This let me say again is not a mere fantasy but a strictly biological account of a biological event. For it is apparent that we are living in an era in which life has reached one of the critical stages of its evolution when for a variety of reasons national organizations have come to see that they are not self sufficient and when new organizations are developing which seek to operate as a mode of intelligence for the whole of mankind.

It is appropriate that medicine should be in the forefront of this process. The aims of medicine are purely beneficent, and it is our proud and treasured tradition that medical science knows no national boundaries and that a discovery made in one country today is available to the rest of the world tomorrow. But there is another and even more important reason namely, that the conditions of health of each single individual are profoundly modified by the fact that he or she lives in a community and in this respect the world today is a single community. Infection can now spread in a few days from one end of the world to the other and may thus enter a country in which as a result of their bacteriological history the inhabitants possess a poor immunity to the invader. Hence every nation is vitally interested in the incidence of many infections in all other nations. Moreover differences in the morbidity and mortality statistics for different diseases in different parts of the world may prove of the greatest value in providing clues as to their causation. Cancer is one obvious example of

SANITATION IN RURAL AREAS

Sanitation in rural areas and small communities was the subject of discussion of the WHO Expert Committee on Environmental Sanitation when it met for its third session in late July 1953. Documentation from various countries provided a background for the committee's study of the sanitation problems of two-thirds of the world's inhabitants—those living in rural areas.

India

Two papers from India, one by M. V. Suryaprakasam, Public Health Engineer, Vijayawada, Madras, and the other by P. C. Bose, Chief Public Health Engineer, State Health Department, West Bengal, described conditions in that country and the efforts which have been undertaken to improve them. Excreta disposal from individual houses in rural and semi-rural areas is a major problem. Among the 85% of the population living in innumerable primitive villages, there are no organized means of removing excreta from the fields and by-lanes which are used by the people in the absence of any form of latrine. Town dwellers are provided with service latrines, but the removal of excreta and the cleaning of these facilities are dependent upon a community of scavengers who are social outcasts. In cases in which excreta are carried to a disposal ground, they are composted along with other town refuse—a procedure which is satisfactory though the methods used for the conveyance of the excreta and the existence of a special group of people whose social function it is to collect them are far from satisfactory. In rural areas of India where sewerage

systems with centralized treatment works would be uneconomical, the immediate aim is to induce individual householders to construct latrines requiring no servicing and with a hygienic method of excreta disposal. Pit latrines for the use of two families have been adopted in some towns, and the cost of such an installation is within the means of lower middle-class and working-class people. More well-to-do people could afford to install flushout latrines connected to a septic tank and an absorption field. Introduction of such sanitary measures depends, however, upon proper education of the people.

The supply of water is another serious problem in rural India. Ancient Indian national epics contain many references to the supply and preservation of water and to concern for keeping water supplies free from contamination. Unfortunately, present-day villagers, ignorant of the rules of sanitation known to their forefathers, use the same water for all purposes—bathing and washing clothes as well as drinking and cooking.

Experience over the past thirty years has shown that the best and safest source of water supply is the tube well. For its construction, a pipe—usually of galvanized wrought iron—is driven into the earth until water is struck. At the bottom of the pipe is a strainer or filter which admits subsoil water but prevents the entry of fine sand. Studies on rural water supply carried out in an area near Calcutta by the late Professor K. Subrahmanyam and Professor Vaskaran of the All India Institute of Hygiene and Public Health revealed that "tube wells in that area yield a water of quality that is not significantly affected by the degree of sanitary conservation or the lack of it at the surface."

to the practice of medicine with its concrete problems and personal relationships though daily made aware of the importance of preventive medicine, is usually less interested in and fitted for, what seem the more abstract problems of the etiology and prevention of disease and the administrative measures for which the latter often calls. Conversely, the medical statistician and the medical administrator have chosen their sphere of work in preference to consultant and general practice.

Hughlings Jackson quoted Herbert Spencer as saying that integration must keep pace with differentiation as division of labour necessitates co operation, and nowhere is this truer than in preventive medicine. The statistician and the physician here are not doing different jobs: they are dealing with different but inseparable aspects of the same job. Let me illustrate this by reference to poliomyelitis. It is a commonplace which is too easily forgotten that clinical observation is the foundation of all knowledge: for the nosological isolation of a disease depends in the first instance almost always upon a combination of clinical and pathological observation, and bacteriology and immunology are built upon the same two foundations. But when we come to the practical fieldwork of epidemiology, clinical recognition of paralytic and still more of abortive cases is basic. All this is perhaps obvious, but I stress it because I believe it points the way to increasing the interest of the clinician in vital statistics, which is to convince him that his contribution just as in preventive medicine generally must be made not to what is apt to seem to him an obscure and abstract discipline but in his own sphere, in which he is the specialist and where the part he has to play is indispensable because it is irreplaceable. And let us by all means add to this approach any information which will show the clinician the value and the use of the material which he supplies.

Vital statistics dull! Not myself being a mathematician, perhaps I can afford to romanticize a little. It was Pythagoras who set number at the heart of the universe and saw in mathematical relations the foundation of everything that exists. I have often thought that the present age might fitly be described as neo pythagorean. Every branch of science has become increasingly dependent upon mathematics and future historians of thought may well regard it as the supreme achievement of the human mind that it was able to create mathematical symbols of such complexity and subtlety as to provide what seems to be an inexhaustible mode of representing the universe: for on this symbolic representation depends in no small degree our power of action. It is surely of particular interest to us today that, if I understand them aright, mathematical physicists have found that when they seek to represent the behaviour of matter in its minutest sub divisions, only statistical methods are applicable. And it is to the mathematics of statistics applied to human populations that we look for the source of our power to improve health and prevent diseases which cannot be controlled in any other way.

This congress therefore has a twofold purpose: that we may learn from each other and that we may collectively impress upon the widest possible public the importance for the welfare of the whole world of the task upon which experts in vital statistics are engaged.

faced with a more difficult psychological problem than previously

"The fear of epidemic disease has been the great ally of sanitary progress in all countries. Former and less-highly trained African workers had the presence of plague and smallpox or the recent memory of these diseases to support their endeavours and to act as a spur to local activity. The present phase is more difficult. Major epidemic conditions have been controlled, and the African health inspector or hygiene orderly has now to work in a general atmosphere much less conducive to spectacular results. He must persuade the people that the effort required to obtain a healthy environment is really worth while."

Because the African worker may easily become discouraged in the face of this enormous but less well-defined problem the leadership of European inspectors will be necessary for many years—to guide, stimulate, organize and encourage work in rural hygiene.

The Americas

A paper by W. R. Sanches and E. G. Wagner of the Serviço Especial de Saude Publica (SESP) of Brazil gave an account of excreta-disposal programmes carried out in rural areas of that country. A preliminary survey of four towns of the Amazon Valley had revealed that conditions greatly favoured the transmission of intestinal parasites. It was necessary to devise a means of excreta disposal suitable to the economic standards of the population concerned and it was found that in most instances the construction of privies was the immediate answer.

For carrying out the project, trained personnel were needed and since previous experience had shown the advisability of using local people training courses were organized for preparing "guardas" for sanitation work. These guardas subsequently made sanitary surveys (one guarda for each group of 400 to 500 houses was adequate) aided in the building of privies, gave instructions on how to maintain them and made

inspections to assure that these instructions were put into practice.

An important task of the guarda was to promote health education in all their contacts with the people. It was found that if the aid of the people was enlisted and part of the construction was assigned to them their appreciation and co-operation were much better.

A survey made three to four years after this sanitation project had been undertaken showed that intestinal parasitism had decreased. While the privies constructed may not be the final answer to the problem of excreta disposal in rural areas of Brazil they have at least done much to promote better health habits among the people and to point out the importance of proper sanitary facilities.

A campaign undertaken by the National Federation of Coffee Growers (NFCG) of Colombia to provide farmers with adequate water supplies was described in another paper by L. Pachon Rojas, Director General of Rural Hygiene of the NFCG. With the technical and financial assistance of the NFCG, systems of water supply (collective or individual as the case required) were installed in rural areas of Colombia, particular attention being paid to coffee-growing farms. The health and economic benefits of the campaign were considerable and the ten year experience gained in this co-operative enterprise could be of value to other localities with similar problems.

In a paper by M. D. Hollis, Assistant Surgeon General of the US Public Health Service, the economic aspects of rural sanitation in the USA were considered. Although rural health conditions in the USA are comparatively good, they are inferior to urban health conditions, partly because rural sanitation is less a social responsibility than an individual responsibility which many rural families cannot finance. An estimated 27 million persons among the rural popula-

mode of usage the depth of strainer or location of tube well'. Bacteriological examination of 3,586 samples from tube wells during the course of two years showed that 80% of the samples were bacteriologically pure

The Government of West Bengal has since 1947 been spending \$252 000 yearly for the sinking of tube wells and masonry wells where surface water is not available. Under a recent development scheme, 8,600 tube wells and 350 surface wells were sunk during the period August 1947-December 1952. There is a total of 22 446 tube wells functioning at present.

While it is difficult to assess with any degree of accuracy the positive health benefits resulting from efforts to increase the sources of water supply in parts of rural India, it is known that the number of deaths caused by gastro intestinal diseases is decreasing.

Africa South of the Sahara

Water borne intestinal diseases are wide spread among African populations according to a paper presented by Dr N D R Schaafsma, Public Health Engineer of the WHO Regional Office for Africa. It seems likely, he states, that these infections result from the use by village populations of dug wells or small lakes and pools as sources of domestic water supply.

In some areas little water is to be found and its supply therefore creates the greatest difficulties. For example, in one part of Nigeria the only available water during the six month dry season is from a single stream. People live as far as 30 miles (50 km) from this stream and most of the population of about 200 000 store water during the rainy season for use during the dry months. Pots of 3-4 gallons (14-18 litres) capacity are used for this purpose, and the more well

to do people possess up to 300 such pots sunk in the earth to keep the water cool. During a survey of this district more than 1.5 million of these pots were counted. In order to prevent mosquito breeding in the area, where yellow fever is endemic, all pots have to be covered when full and carefully dried when empty.

Sewage disposal in many of the countries and territories of Africa south of the Sahara is also far from satisfactory. In Angola bored hole latrines have been introduced. In small towns and villages of the British colonies public latrines have been constructed near markets. Some of these have septic tanks, but when no water borne disposal can be provided daily cleaning and flushing are insufficient to keep the latrines clean and to give the required dilution in the tanks. In other public latrines night soil buckets are used, but the disposal of the night soil creates difficulties. If the bucket system is used as it sometimes is in towns composting takes place.

WHO has planned a project for the Seychelles in which better sanitation will be systematically introduced with health education as an important concomitant. It is expected that the improvement of water supplies of sewage disposal practice and of housing will help to control intestinal parasitic infections and to create better health conditions.

In a paper entitled *Progress in the training of rural health staff in Uganda*, E S Hines, Chief Health Inspector Uganda Protectorate, outlined the training of assistant health inspectors and hygiene orderlies and described the duties of the health staff. Much has been achieved in Uganda since a Public Health Act was passed in 1935 but much still remains to be done with regard to the development of training of assistant health inspectors and of ancillary staff.

The author of this paper concludes that the African health inspector of today is

aced with a more difficult psychological problem than previously

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tion need new or improved water supplies, and 33 million have unsatisfactory sewage disposal facilities

There is a great diversity in the rural economy which means that though sanitation needs are common to all areas, the refinement and complexity of sanitation facilities and services cannot be uniform. However, allowing for variable circumstances, the basic elements of rural sanitation in the USA could be realized within a generation

Composting

One aspect of sewage disposal—composting—was treated in detail in a paper by C. G. Golucke, P. H. McGahey, and H. B. Gotaas of the University of California. In a review of the status of composting throughout the world, the authors describe the Indore process, a partially aerobic method of composting in which alternate layers of readily putrescible materials—such as garbage, night soil, animal manure or sewage sludge—and of relatively stable organic matter—such as straw and leaves—are piled on open ground to a height of about 5 feet (1.5 m) or placed in pits, the mass usually being turned twice during the composting process. The liquor draining from the mass may be recirculated. This process, which was introduced into India about thirty years ago, is, with minor modifications, used in a number of other countries—e.g. England, South Africa, Australia and New Zealand.

During the decade 1920–30, various means for mechanizing the composting process were designed and patented, among them a process developed by Dr. Giovanni Beccari and a modification of this known as the Verdier process. It is reported that more than fifty municipalities in Italy and France use the Beccari or Verdier process for composting municipal wastes.

An operation that is essentially an adaptation of the Indore process is used in the

Netherlands. In some communities in Denmark and Sweden mixed municipal refuse is prepared for composting by a process which consists of mechanical grinding and segregation and is then composted in open piles 5–6 feet (1.5–1.8 m) high under partially aerobic conditions.

There is widespread interest in composting in the USA, owing largely to the need for new methods for the disposal of municipal refuse. A rapid mechanized process is favoured, and the completely aerobic method seems most suitable.

While no definite statement can be made concerning the possible health hazards involved in the composting of night soil or raw sewage sludge with municipal refuse, there are good reasons for believing that pathogens are destroyed in well-operated composting. Careful observations made in various regions where composting of night soil or sewage sludge has been conducted on a large scale have failed to demonstrate any incidence of disease resulting either from the operation itself or from the use of the finished compost. The soundest composting procedure may prove unsatisfactory from a public health standpoint, however, unless hygienic methods of collecting the refuse are used.

The economic value of compost varies widely throughout the world according to the habits, customs, prejudices and needs of different peoples. At one extreme, the use of compost on the soil is the very basis of survival; at the other extreme, compost represents just another soil additive available in small amounts to the home gardener but of no importance to the farming business. Both the smallest (China and India) and the largest (the Netherlands) users of inorganic fertilizers are also the greatest producers of compost. There are good prospects that the economic value of compost may reduce the cost of disposing of municipal wastes and sewage sludge when part of the present

cost of refuse disposal and sewage treatment is subtracted from the cost of producing compost a municipality should be able to produce it at a price which would guarantee its acceptance even in areas of the world where commercial fertilizer is widely used and where farmers are not of necessity concerned with the reclamation of organic wastes

Health Education Aspects of Rural Sanitation Programmes

The health education aspects of sanitation programmes in rural areas and small communities were the subject of a paper submitted by M. Derryberry, Chief of the Public Health Education Division of the US Public Health Service. The author points out in this paper that in villages and rural areas the co-operation and understanding of the people must be secured when environmental changes are attempted since the people themselves must perform many of the actions needed to break the chain of transmission of disease. The "sciences of human behaviour" provide the basis for the health education which the sanitarian must therefore undertake in planning environmental improvements. The essential facts about the people of the community must be assembled, answers to questions such as the following being sought: What health problems do the people recognize and are they interested in and how much do they already know concerning them? What are the usual channels of communication among the people concerned? What social, cultural and other influences might affect the programme? Who are the leaders, natural as well as titular, through whom the people can be reached? What resources exist in the community that might contribute to the educational programme?

If careful study and planning with the people for the educational programme have

preceded putting it into operation, few problems should subsequently arise. The sanitarian's task then becomes one of checking progress in terms of the criteria which have been set and of assisting the people to accept responsibility for their own improvement.

Evaluation of the Results of Sanitation Programmes

The means of evaluating the results of rural sanitation programmes were outlined in a paper by the Chairman of this session of the committee, Professor G. Macdonald. If conditions before and after sanitation work has been carried out are to be compared for the same area, statistics of mortality (in as full detail as possible) and of morbidity attributable to those diseases influenced by sanitation should be collected for as many years as is possible and should be analysed to show both a trend and the degree of variation in the trend. It is pointed out, however, that such statistics may often be very difficult to evaluate.

Among the basic data listed by Professor Macdonald as being necessary for the estimation of the results of sanitation programmes are: general information concerning the area and the nature of the sanitation procedures instituted together with similar information on an area selected for comparison; population figures, i.e. census data; mortality statistics with an account of the method of notification and certification of death; an estimate of their accuracy; etc.; morbidity statistics with information concerning their source and a description of the environment including such elements as housing, disposal of excreta and refuse, water supply, food cleanliness, vermin and industrial hygiene.

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presented in a report which will be submitted to the Executive Board in January 1954. If its publication is authorized by the Board it will subsequently appear in the Technical Report Series.

STUDY GROUP ON PERINATAL MORTALITY

A study group on problems related to the perinatal period was convened in Brussels late in 1953 by the WHO Regional Office for Europe, in agreement with the Belgian Ministry of Health. The group composed of experts from nine countries of Europe and America, met under the chairmanship of Dr Marcel Lelong, Director of the Ecole de Puericulture in Paris. In their conclusions, the group stressed the urgent need for trained personnel of the right quality if the perinatal mortality rate was to be brought down. Among the other factors necessary to achieve the same end were greater prenatal supervision, improved conditions for hospital confinements and greater safety in the case of home confinements, and the greatest possible care of the newly born infant, with close collaboration between obstetrician and paediatrician.

The study group agreed that in order to prevent the principal causes of perinatal mortality an endeavour should be made during the perinatal period: (a) to detect medico-surgical disorders likely to affect the health of the mother; (b) to give advice on general and special hygiene, and in particular on feeding and professional occupations in order to ensure that the mother's health shall be as good as possible and that there shall be regular development of the foetus up to full term; (c) to ensure satisfactory conditions for delivery by detection of causes of dystocia and by suitable psychological

preparation; and (d) to prepare for the post-natal period by suitable instruction to mothers so that they may know how to fulfil their maternal functions satisfactorily.

It would appear to be very important that the physician in charge of the confinement should also carry out the prenatal examinations or at least that such examinations should be effected under his direct supervision, with the collaboration of any specialist he may consider necessary for general medicine, radiology, nutrition or psychology.

Prenatal consultation centres should preferably be attached to a maternity establishment. Independent prenatal centres are not to be recommended as effective liaison cannot generally be established with the obstetrician, and this lack of continuity considerably diminishes the value of the examinations during pregnancy from both the medico-obstetrical and psychological standpoints.

In towns all methods are easily applied. In rural areas, the creation of small centres under the control of a maternity establishment may be envisaged. Specially equipped trucks might be tried. It seems that the greatest hope might lie in the contribution of rural physicians who should receive adequate training in preventive medicine.

The proportion of hospital and home deliveries varies from country to country.

Hospital delivery offers preparedness to combat sudden emergencies and gives the

very optimum in physical safety. This holds true for both mother and child if close co-operation with a paediatrician is ensured. It also offers the mother a good chance for physical and mental relaxation if her mental attitude is not opposed to delivery in an institution.

Home delivery offers uninterrupted continuity in the relation between mother and other family members and close contact between mother and newborn child which also may be valid for hospital delivery if the rooming-in system is adopted. For many mothers too there is less emotional upset, and this may favourably influence the labour. In addition the risk of infection in the newborn child is reduced.

The study group found that it was not possible to make any general recommendation on the subject of hospital versus home deliveries. This problem is closely related to the historical, cultural and geographic structure of a country as well as to the institutional facilities available.

Whether hospital or home deliveries are preferred it should be stressed that every effort must be made to perfect the prevailing conditions concerning assistance and equipment.

The collaboration of a paediatrician is a prerequisite in the management of pregnancy, labour and the puerperium.

The extent of the training and the qualifications of the personnel responsible for prenatal and delivery care depend on the degree of responsibility of the midwife. If she is to take greater responsibility for normal delivery in the home her training should be more extensive than if she is to work entirely in hospital as a maternity nurse under the supervision of the doctor. But whether she is acting as a maternity nurse or as a midwife it is important that she should receive more instruction than is now the case in the psychology of the expectant mother so that she can establish the close relationship with

the mother which is so important. These remarks apply with equal force to the doctor.

The great importance of the early prevention of all mental, physical and socio-economic troubles which may afflict the mother and her child should be emphasized in the training of personnel responsible for prenatal and natal care. The information given to the mother by different health workers should not be conflicting. Methods should be found to keep the personnel who are working in prenatal and natal care fully informed of the latest developments in their specialty.

Wherever the birth takes place the objectives are the same. First, there should be no separation of the child from its mother except in cases of imperative need. Secondly, common infections should be prevented. Thirdly, the success of maternal feeding should be ensured by creating the necessary psychological atmosphere and by avoiding technical errors resulting from the still too widespread ignorance of the physiology of lactation.

These objectives cannot be achieved without sufficient qualified personnel capable of creating an atmosphere favourable for the development of the mother-child relationship.

For the reduction of perinatal mortality two conditions must be fulfilled. There must be collaboration between the obstetrician and the paediatrician in all fields (research and application) at all times (pregnancy, confinement and post partum) and at all levels (obstetrician, paediatrician, midwife, puericulturist) and secondly effective liaison must be established and adequate personnel must be provided as rapidly as possible or failing this there must be an exchange of information among the various persons successively concerned with the health of the child.

On the whole it was the opinion of the study group that in the last analysis the most

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However penicillin alone will not solve the problem. The quick cure does not always encourage the patient to take the necessary follow up treatment nor indeed does it prevent quick reinfection. It is obvious then that any determined effort to reduce the incidence of venereal disease must go beyond purely medical and administrative measures to embrace the social and psychological aspects of the problem. Better living conditions on board ship and properly run centres for recreation and meeting people on shore would go far towards reducing the explosive loneliness of the seafarer. The example of Norway is noteworthy in this respect. Of all the countries in the world Norway is the one with the highest percentage of seafarers in the population and the welfare of its sailors is a matter of national concern. The Norwegian Government has accordingly established homes for Norwegian sailors in a great many ports throughout the world. Reports on their work are very satisfactory. But the Norwegian example cannot simply be applied by all other countries. In social welfare work for seafarers one immediately comes up against the difficulty that besets all international work—differences of culture, religion, race and

language. Figures on the number of seamen visiting existing homes are encouraging but much work will have to be done perhaps by the seamen themselves if far reaching changes in their life ashore are to be brought about.

From the psychological point of view a better understanding of the motives underlying prostitution is essential in the fight against venereal disease. Efforts to eradicate prostitution alone are bound to fail as they have failed in the past for prostitute and client are bound by promiscuity by the inclination towards temporary intercourse with different people.

It is with these and related subjects—medical administrative social and psychological—that the international course at the Rotterdam Port Demonstration Centre was concerned. It was a 12 weeks course attended by 11 venereal disease specialists—physicians, social workers and serologists—from different countries in Europe. The course was exclusively in English; a course in French will be held in the autumn of 1954.

By intelligent use of the latest methods of treatment, by the improvement of living conditions by proper education and co-ordinated international action it may be possible to eradicate venereal disease completely. The Rotterdam Port Demonstration Centre hopes to contribute towards that end.

TYPHUS CONTROL IN GUATEMALA AND MEXICO

From the Americas come two reports on typhus-control activities. The first concerns a campaign undertaken by the Government of Guatemala with the help of the Pan American Sanitary Bureau in 1946; the second describes a nationwide campaign initiated in 1951 by the Government of Mexico.

The Guatemalan campaign included vaccination of 70% of the population living in zones of typhus endemicity and disinfection of all cases and contacts. These operations were carried out by 25 strategically located teams which were under the supervision and training of two doctors who were in charge of two mobile units.

From the point of view of controlling venereal disease occupational factors create special problems. As the sailor is ever on the move the doctor in one port may have difficulty in determining his medical history perhaps because of a language barrier, perhaps because the seaman does not know. Shore leave may be too short for a fresh diagnosis and the best treatment is consequently not easy to determine. To overcome these difficulties the Office International d'Hygiène Publique (of which the World Health Organization is the successor) produced an international personal booklet, a copy of which was to be given to every seaman treated for venereal disease, and in which the necessary information could be recorded. An inquiry conducted by the Rotterdam Centre revealed that in many ports these booklets are not used and that in some they are even unknown. Then again, bacteriological diagnostic methods have not been standardized internationally, so that a doctor may not be able to evaluate a laboratory report made in the last place the seaman visited.

As a solution to these problems one Dutch shipping company adopted the interesting practice of placing on board its freighters a male nurse who at the same time acted as the ship's clerk. It had the surprising result of stepping up the number of cases reporting for treatment of venereal disease from 7.5% to as much as 17% of the crew (the figures are based on the European crews of 11 freighters over the period of one year) and it is thought that if all cases were reported the figure would be even higher.

As to the facilities for treatment in ports the inquiries conducted by the Rotterdam Centre show that they are often unsatisfactory. Sometimes the clinics are far away from the docks and difficult to reach the hours of opening may be short and there may be a long wait. A few clinics are open for only one hour a day. These admittedly,

are extreme cases, but if we consider the crews of tankers for example which stay but a very short time in port, it is obvious that everything should be done to make consultation and treatment easily available. In the East some sailors are reluctant to attend free clinics, partly because of racial prejudice partly because they have no confidence in the methods of treatment. From other places however, come reports of very good treatment centres they are located near the docks and are easy to find, free help is given day and night and hospital beds are also available free of charge. One centre has special bacteriological and serological laboratories.

In general, hospitalization is a vexed question. Administrative and financial difficulties of all sorts may arise. Seamen may be reluctant to go to hospital because they are in a foreign country, or because it costs money. And what of the sailor who on discharge from hospital has no money and finds his ship gone? If some social service does not take care of him, he may well fall into the hands of the police who will perhaps expel him from the country.

In recent years the custom has been establishing itself of having personnel not medically qualified give penicillin on board ship. Regulations differ from country to country but on the ships of the major maritime nations it is usual when no doctor is carried on board for the mate or the chief steward to give penicillin treatment to patients and suspects. The opposition to this practice shown in the replies to a questionnaire sent to port doctors throughout the world (and only in 25% of the replies was the practice actually recommended) would seem to indicate that in many port clinics the latest methods of treatment are not properly known. Yet there is no doubt that such use of penicillin can be extremely valuable particularly in cases of gonorrhoea. For syphilis there are certain reservations as the diagnosis

STATISTICAL PROGRAMME OF THE PAN AMERICAN SANITARY BUREAU *

The importance of statistics for co-ordinated health planning in the Americas has been recognized for many years. The Pan American Sanitary Code adopted in 1924 includes many references to statistics especially to the statistics of the communicable diseases.

In the last few years international agencies have recognized the need for the development of comparable vital and health statistics for national and local programmes as well as for the fulfilment of the international needs for such data. The statistical programme of the Pan American Sanitary Bureau (Regional Office for the Americas of the World Health Organization) has been expanded to render greater service to governments in the field of health statistics and in the co-ordination of the statistical programme of the Americas. This expanded programme includes (1) collection analysis and distribution of epidemiological statistical information (2) consultant service to countries (3) statistical training programme and (4) consultant service on statistical phases of programmes of the Bureau.

In accordance with the objectives of the Pan American Sanitary Code a major activity of the statistical programme of the Bureau is the collection analysis and distribution of statistical information regarding communicable diseases.

The International Sanitary Regulations established international reporting procedure for six quarantinable diseases: cholera, plague, relapsing fever, smallpox, typhus and yellow fever. On receipt of a report of an

outbreak of one of these quarantinable diseases the Pan American Sanitary Bureau disseminates this information to all countries directly concerned. All reports received during a week are combined and included in the *Weekly Epidemiological Report* distributed by air mail to all countries. Reports of quarantinable diseases are sent by cable to WHO headquarters in Geneva.

Health officials require reports of other communicable diseases in addition to the quarantinable diseases. The Pan American Sanitary Bureau on a monthly basis collects information regarding the notifiable diseases and publishes these reports in its quarterly publication *Health Statistics*.

In addition to statistics of the communicable diseases morbidity statistics in the broader sense of all illness are valuable for planning and guiding health programmes. The statistical programme of the Bureau includes assistance to governments in programmes involving health statistics.

Articles on statistical programmes and summarized data illustrative of the activities of public health statistical agencies in the American countries are published in the *Boletín de la Oficina Sanitaria Panamericana*.

In order to assist in the improvement and standardization of health statistics the Bureau has established a programme of technical assistance to countries upon request through the Zone Offices.

One of the significant recent developments for the improvement of health statistics was the establishment of the (WHO) Expert Committee on Health Statistics and of the National Committees on Vital and Health Statistics. The programme of the Bureau includes contracts with national committee members.

* Summary prepared by Dr. R. H. R. Puffer, published in *Boletín de la Oficina Sanitaria Panamericana*, 1953, 35, 11.

Public opposition to the campaign was eliminated within the first six months. From June 1946 to December 1951, DDT was applied to 194,711 persons, and 1,538 126 articles of clothing were disinfested. In 1950, mass vaccination gave way to a programme of selective vaccination by age groups in certain zones. UNICEF assistance in the form of provision of DDT and other necessary supplies, was given in the same year.

The results of this campaign—which will be consolidated through continued vaccination and disinfestation—are illustrated by the following figures showing the decrease in the number of cases and of deaths over a nine year period.

Year	Cases	Deaths
1943	1 338	213
1944	2 144	381
1945	2,834	323
1946	1 043	135
1947	251	37
1948	69	9
1949	26	2
1950	10	2
1951	8	0
Total	7 723	1 102

The materials employed in the Mexican campaign are of interest. DDT powder is used alternately with other residual effect insecticide powders in order to prevent the vector from developing resistant strains. Envelopes containing a quantity of 10% DDT sufficient to delouse two articles of underwear are available at 10 cents each (Mexican currency) and a 3½-cent profit per envelope is used to further the campaign activities. Experiments with laundry soaps have been undertaken and it has been found

that a soap containing 5% DDT is very effective in killing the vector, and that one with 3.5% DDT is adequate. A 2% DDT soap is now under study. Also of note is the discovery that year old soap retains more than 75% of its initial DDT content. An effort is being made to interest large soap manufacturers in producing and marketing this soap, to be sold at cost. For head delousing, a vaseline containing 2% DDT has proved more acceptable than kerosene, DDT powder, or shaving. This product is not only 100% effective for hair delousing but also has a residual effect which kills lice larvae.

Mass treatment is administered in communities which show, in lice surveys, a higher than 30% index. Selective treatment by blocks is applied in communities having a 10%–30% index, and selective treatment by families in those in which the index is less than 10%. All clothing and other articles which come into contact with the body are treated with DDT powder, particular attention being paid to the seams. The original infestation rate was 3.1 times that after treatment of clothes with DDT powder, and 4.5 times that after use of DDT soap.

Health education is an important feature of this campaign. The trained nurses employed in the work were recruited either locally or among those having a cultural background similar to that of the population of the specific area to which they are assigned.

Further details concerning these two campaigns may be found in the *Boletín de la Oficina Sanitaria Panamericana*.¹

INFLUENZA EPIDEMIC IN THE NORTHERN HEMISPHERE—1952 3

While it had seemed since 1933 that the important epidemics of influenza occurred at intervals of from four to eight years hardly two years separated the last two pandemics of 1950-1 and 1952 3. Do major epidemics tend therefore to recur at increasingly shorter intervals? Or is it simply that greater accuracy of diagnosis and information makes the outbreaks even in a mild form seem much more widespread than was previously supposed? The authors of a study appearing in the *Epidemiological and Vital Statistics Report*¹ consider this latter explanation as the more likely.

South East Asia, the Far East, and the Pacific Islands

The first epidemic of any importance in 1952 in the Northern hemisphere occurred in Guam in October. At the end of the same month an outbreak was noted in the west of the Caroline Islands which spread to the whole archipelago and reached the Marshall Islands. At the end of November an unidentified respiratory disease appeared in the Philippines and subsequent information referred to serious influenza which continued until February. At the end of December and the beginning of January news arrived of an acute respiratory disease with the characteristics of influenza in the Hawaiian Islands. In Japan the epidemic began in December in the Tokyo region; it spread to other parts of the country and by 17 January 20% 30% of schoolchildren at Takaoka and in the

county of Shimoshinkawa were absent on account of the infection. In the second half of January 30% of the inhabitants of Tokyo appeared to be affected. The highest number registered in one week in Japan was 9 853 for the week ending 14 February.

There is no exact information for most of the other countries of this geographical area.

America

In America there was a marked increase in December in the number of cases of acute respiratory diseases among military personnel at one station in Missouri. During the last week of the same month an outbreak of an influenza like infection was reported in Colorado and North Carolina. At the beginning of January an epidemic broke out among the civilian and military population of Alaska. At the same time epidemic influenza appeared in Indiana, South Dakota, Oklahoma, Missouri, and Florida. In a very short time all the States of the Middle West and of the South—particularly Texas—were affected as were to a lesser degree some of the States of the South East and North East. In many areas the schools had to be closed. By the end of January the incidence had declined although it was estimated that in the second week of February 2% of United States workers were still absent on account of influenza or other diseases of the respiratory tract. This was the highest rate observed since 1946. The influenza in general was mild but certain serious forms were found among old people and young children. In Pierce County, Washington State alone 10 infants who had

as well as with national health services for the implementation of the internationally recommended standards

To offset the shortage of qualified professional statisticians the international agencies are working together to provide educational facilities to meet the demand. Statistical training centres have been established, and fellowships are being given to personnel employed in statistical programmes.

The first training programme in the field of vital and health statistics in the Americas was the Inter American Seminar for Biostatistics held in Santiago, Chile, from 25 September to 15 December 1950, sponsored by the Government of Chile, the United Nations, the World Health Organization, the Pan American Sanitary Bureau, the Inter American Statistical Institute and the National Office of Vital Statistics of the United States Public Health Service. The

second major undertaking in the training of statisticians was the establishment of the Inter American Center of Biostatistics in Chile in accordance with the agreement signed on 21 August 1952 between the Government of Chile, the United Nations and the World Health Organization. The first course of 9 months duration, started in the School of Public Health on 2 March 1953, with 32 students: 17 from Chile and 15 from 14 other countries.

In order fully to utilize the health and medical data collected in the various programmes of the Bureau, statistical consultant service is rendered in the planning phases so that valuable data are collected for the administration of the programme and evaluation of the work as it progresses and for the measurement of the results. Since projects are carried out in the countries, this requires local consultant services.

Gesundheit ist Reichtum

An abridged version of Professor C. E. A. Winslow's study *The cost of sickness and the price of health*, originally published in 1951 in English as No. 7 in the *World Health Organization Monograph Series*, has recently been published in a German translation under the title *Gesundheit ist Reichtum* by Georg Thieme Verlag, Stuttgart, at DM 2.70.

Sanitary Report on the Mecca Pilgrimage

As the International Sanitary Regulations (WHO Regulations No. 2) did not come into force until 1 October 1952, when the Mecca Pilgrimage for the Year of the Hegira 1371 (A.D. 1952) was over, WHO has collected information on that Pilgrimage in accordance with the provisions of Article 151 of the International Sanitary Convention of 1926/38, which imposes on health administrations the same regulations governing the furnishing of sanitary information as Article A15 of the new Regulations. This information has been published in a summary report issued as a supplement to the WHO *Weekly Epidemiological Record* No. 359 and dealing with the journey to the Hedjaz, arrival and sojourn there, Arafat and Mena, days of the return journey, contraventions of the International Sanitary Regulations, general comments and the Jeddah quarantine station.

appeared well in the evening died overnight the autopsy revealed the presence of tracheo-bronchial and serous exudate in the lungs

In Mexico the epidemic began at the end of November and attained its peak towards the end of January. The same is true of Alaska where towards the end of January more than 30% of schoolchildren in the Anchorage region were affected. In Canada local outbreaks were noted at the end of January but the epidemic did not become general. There was some recrudescence between the end of March and the beginning of May the highest number of cases being recorded during the week ending 2 May. In Costa Rica Guatemala Nicaragua Panama and in Trinidad and Tobago influenza was notified between the beginning of February and the beginning of March. In Colombia a local outbreak developed at Medellin towards the end of March. In Venezuela an outbreak began between 17 and 23 May and attained its peak at the beginning of June. In June also an epidemic developed in Honduras.

Europe Africa Near and Middle East

Unlike former epidemics that of 1952-3 seems to have started almost simultaneously over a considerable area of western Europe. A first outbreak of mild "influenza" was observed in Malta at the beginning of November at the beginning of December a focus was reported in Sweden. Cases of an influenza like disease appeared at the same time in the Netherlands and at the end of December in Portugal. At the beginning of January there was an increase in the number of isolated foci in various countries (England France Sardinia western Austria western Germany) but it was impossible to establish any correlation between them. The peak period of the epidemic in Sweden was in the first half of February. In Denmark and Switzerland the peak was reached during the third week of the same month while in

Italy it occurred during the first 10 days of March and in Spain and Norway during the second week of March. In some countries (Denmark Finland Spain) the peak was reached much later during that winter than in the previous epidemic.

Although it is not possible to say why certain territories seem to have escaped influenza altogether—for example the Mediterranean area in France the Rhone Valley and the Alps Ireland Scotland and the east of Austria were very little affected. On the other hand practically the whole country was affected in the case of the Federal Republic of Germany Italy Spain Switzerland and Yugoslavia. The infection was mild everywhere.

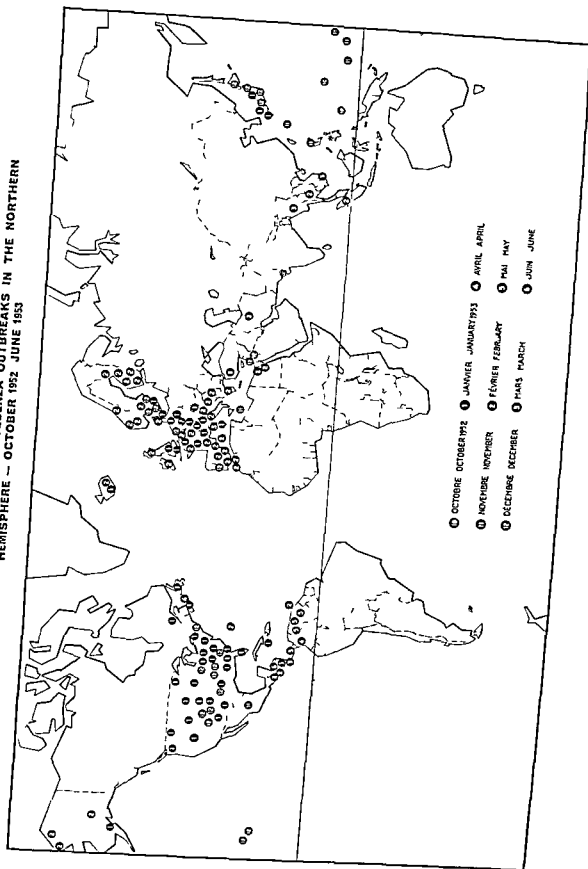
Mortality and morbidity

Mortality due to influenza was lower than in 1951 in all areas for which exact information is available with the exception of Paris. The authors give tables showing the number of cases and the number of deaths notified for many countries by monthly or four weekly periods together with the corresponding figures for previous epidemics. The variations in the figures are significant even though they represent a very small part even for certain countries an infinitesimal part of the real incidence of influenza.

Virus

As in 1951 virus A influenza was definitely more frequent than virus B. However virus B did play some part in the epidemic in Denmark and its presence was notified in Ireland Sweden and the USA. Two principal groups of virus A strains were isolated one group resembled the 1951 Liverpool strains and the other—the majority—the "Scandinavian" strains. The preponderance of the original A prime (FM1) antigen has diminished since 1947. The Liverpool strains were reported from Paris Toulon Geneva and Finland and in connexion with all the

FIG 1 CHRONOLOGICAL DEVELOPMENT OF INFLUENZA OUTBREAKS IN THE NORTHERN HEMISPHERE - OCTOBER 1952 - JUNE 1953



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examinations carried out in Portugal, it seems that none were isolated in North America or Japan. The ability to survive of the Liverpool strains appears to be much

poorer than that of the Scandinavian strains. The 1952-3 epidemic was not heralded by premonitory outbreaks as was the case in previous years.

LEPROSY COMPARATIVE HEALTH LEGISLATION

A comparative study of leprosy control legislation has been published in the latest number of the *International Digest of Health Legislation*¹. The recommendations of the international leprosy conferences and, more recently, of the WHO Expert Committee on Leprosy have aimed at humanizing the existing practices for dealing with lepers while at the same time affording the best possible protection for the health of the community.

These practices need to be reviewed from time to time for many of them interfere with the liberty of the subject (compulsory isolation, prohibition of marriage and of engaging in certain trades or callings, etc.). Moreover, present knowledge of the disease indicates that it is much less infectious than it was formerly thought to be and much less infectious than, for example, tuberculosis. It has also been observed that the incidence of leprosy has often declined most rapidly in countries in which the legislative measures in force were relatively mild.

The laws dealt with in this study are drawn from about 30 countries and have, for the most part, been published either in earlier numbers of the *International Digest of Health Legislation* or in the *Bulletin mensuel de l'Office International d'Hygiène Publique*.

The subject is dealt with under the following heads:

(1) Detection of lepers, notification, examination of suspects and contacts, leprosy surveys and censuses.

(2) Measures relating to lepers: isolation, release and discharge, treatment, trades or callings, marriage, immigration.

(3) Measures relating to household contacts: protection of infants and children, welfare services.

(4) Miscellaneous: definitions, harbouring and return of escaped lepers, occupational rehabilitation, movement of lepers, leprosy regulations, and the role of dispensaries.

(5) Conclusion.

The measures applicable to the leper himself and to his contacts are the most important, and those which are found to vary the most are the measures in force in the different countries with respect to isolation and release. As a preventive measure, compulsory isolation is still the most commonly employed measure in those countries in which leprosy is endemic. However, the forms of leprosy to be isolated, the nature of isolation (domiliary or institutional) and the administrative means employed for segregating lepers differ from one country to another. In certain countries isolation is based on a clinical examination confirmed by a bacteriological examination. This is in keeping with modern teaching. In many other countries, however, no provision is made in legislation for any bacteriological examination.

The prompt discharge of leprosy patients from a leprosarium is now recommended. The WHO Expert Committee on Leprosy holds the view that the prompt discharge of patients from the leprosarium as soon as they are non-infectious may have an important psychological effect and may induce

¹ *Int. Dig. H. L. Leg.* 1954, 5, 3. An offprint of this comparative study will also be published.

leprosy patients to come forward earlier for treatment. Release is generally granted in two stages: first temporary or conditional release followed at a later stage by discharge. The medical criteria for release vary markedly from country to country. In certain countries the conditions for release are vague which may cause a leper to be segregated for an indefinite period; in others no conditions at all are specified. In some instances the conditions for release are more precise than those for isolation where this is so release depends on the evolution of the disease and on bacteriological examinations. The difference in the criteria prescribed in different countries for the release of lepers is very great; the length of the period of isolation before final discharge is granted varying from six months to five years.

Of the measures relating to household contacts of lepers those relating to the protection of infants and children are the most important. Muir holds the view that "if all children were kept free from contact with infection for the first ten years of life leprosy would almost or entirely die out of an endemic country within two generations."

Provision is usually made in leprosy-control laws for the isolation of infants at birth or of older children whenever a case of leprosy is discovered in the family. Such children

are removed either to a foster home or to a preventorium. There are also some leprosy control laws which prohibit leprosy patients from engaging in trades or callings in which the person employed comes into contact with children (children's nurse, wet nurse, nurse, midwife, etc.).

Compulsory isolation and prohibition of engaging in a great many trades or callings usually deprive a leper of his means of livelihood and of the opportunity of providing for his dependants. A great number of leprosy control laws therefore make provision for assistance to lepers and their families. These may take the form of family allowances, free treatment, maintenance of children, etc.

To sum up, leprosy-control legislation varies to such an extent that it is impossible to summarize the study here. In view of the difference in local circumstances as regards facilities for hospitalization and treatment of lepers, diagnostic laboratories, organization of public health services, etc., the diversity of legislative measures for the control of leprosy is only to be expected. It is impossible to frame a uniform programme for leprosy control for the whole world. This is borne out by the survey, the aim of which is to give an analysis of the methods of leprosy control in use in different countries.

SMALLPOX ENDEMICITY IN THE WORLD—1936-50

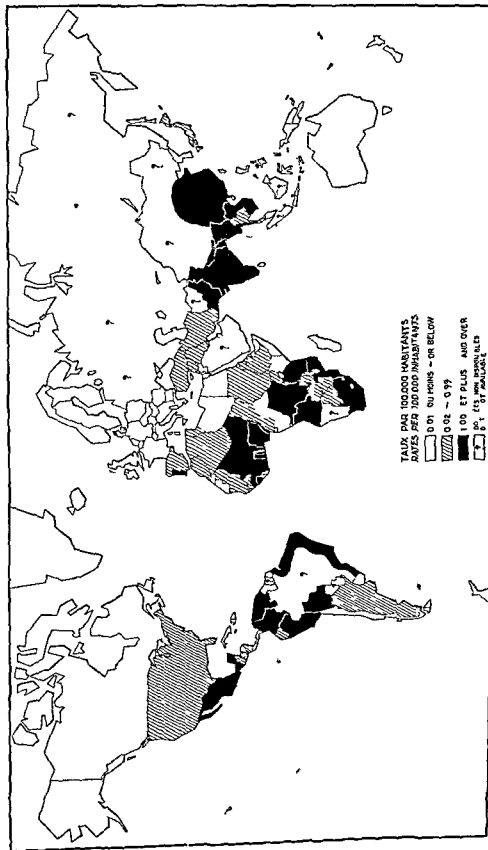
Smallpox is still endemic in several parts of the world despite the measures available today for avoiding and controlling it. Certain areas may remain free from the disease for long periods of time as the result of effective quarantine, systematic vaccination or mass vaccination campaigns and other public health measures. Nevertheless as a consequence of international sea and air traffic there is still a threat of infection from

countries where the disease persists and which are termed "endemic."

A study has been made of smallpox endemicity in various countries of the world from 1936 to 1950 and has been published in the *Epidemiological and Vital Statistics Report*¹. The statistical methods employed and the results they have led to are there summarized as follows:

¹ *Epidem. and Vital Statist. Report* 1953, 6, 227.

FIG 2 WORLD DISTRIBUTION OF SMALLPOX ENDEMICITY CASE RATES 1938-50



" A simple index for judging the endemic level has been worked out for each country by averaging the smallpox attack or death rates for those five years during the period 1936-1950 in which the lowest incidence of the disease was recorded. If the endemicity rate is high the inference drawn is that the endemic level of smallpox in the country was also relatively high.

Using this endemicity rate all countries in the world for which information is available and for which the endemicity rate exceeds 1 per 100 000 in habitants have been placed by continents in their relative order of endemicity.

" This study while not attempting to define the term endemicity suggests a method for its measurement which can be used, for comparative purposes to demarcate zones and areas in which endemic foci of the disease existed during the period under review. Attention is thus focused on certain areas where it is believed that if concerted measures were directed at the eradication of smallpox, the danger of the disease to the rest of the world might be removed or at least greatly diminished and the incidence of smallpox in the world as a whole materially reduced.

" It is acknowledged that the period chosen for study—i.e. 1936-1950—is one which terminated some years ago and that the present picture of smallpox may have changed in those countries where strenuous and determined efforts have been made in the last few years to control the disease. Further the conclu-

sions are subject to several limitations inherent in the statistical information analysed such, for instance as differences in the degree of reporting of smallpox cases and deaths.

" The geographical distribution in the world of countries with endemic foci of smallpox is shown in a map. The highest endemic level of smallpox is found for India and Pakistan, followed by Burma and Indochina. In the region of the Americas Venezuela, Brazil, Colombia, Bolivia, Peru, Paraguay and Mexico have relatively high endemicity rates. In the African continent, among the large sized countries Belgian Congo, Nigeria, Tanganyika and the Union of South Africa have relatively high endemicity rates. In Europe only Portugal shows a relatively high rate.

" A more detailed examination of the figures of individual States or provinces has been carried out for Mexico, USA and India and Pakistan. In Mexico the endemic focus for smallpox is believed to exist in the States in the interior. The pattern of smallpox distribution for the United States of America suggests that some reason other than its proximity to endemic foci of the disease in Mexico must be looked for to explain the presence of the disease.

" A separate examination of the endemicity rates for individual ports shows the highest endemic level of smallpox for Calcutta, followed by Delhi and Bombay. In general all the major ports in India show endemicity rates of an order higher than those for any other country."

Notes and News

First WHO Asian Conference on Malaria

With more than 50 persons from 20 different countries of Asia participating the First WHO Asian Conference on Malaria was held in Bangkok in September 1953 to discuss plans for eliminating malaria as a major public health problem in the Region. Dr Luang Ayurakit Kosol, Director of the Division of Malaria and Filariasis Control of the Thai Ministry of Health, who was elected Chairman of the conference emphasized that the problem of malaria concerned more than half the human race and quite apart from the deaths it caused rendered millions of people weak and inefficient. One of the main themes in the discussions was the significance of malaria not only as a menace to human health but also as an economic liability of the greatest importance. Many examples were given of the economic value of malaria control but one of the most striking was taken from Thailand where more than 50 000 cases of malaria are estimated to have been prevented within a single year by control work in an area with a population of just over 280 000. The prevention of these cases meant a saving of some 175 000 man-days of labour.

The conference concluded that a strong permanent malaria-control organization was necessary in every country where the disease was a major public health problem and that it was highly desirable to carry out malaria control simultaneously in as large area as possible both in order to increase the efficiency of the campaign and in order to reduce expenses the campaign eventually being discontinued after malaria has been controlled for some time. Among its recommendations two should be recalled here one providing for experiments aiming at finding means of reducing the per capita cost of malaria control and another calling for the co-ordination of malaria control schemes not only within a given country but also with WHO assistance if required and if possible on an inter-country intra regional and even inter regional basis.

Mental Health Seminar for Eastern Mediterranean

Under the sponsorship of WHO a very successful two-week seminar on mental health problems was held in Beirut on the invitation of the Government of Lebanon from 23 November to 5 December 1953 and was attended by nearly thirty leading psychiatrists and medical specialists from the Eastern Mediter-

anean Region and Europe. WHO provided fellowships permitting participants to attend from Egypt, Greece, Iran, Iraq, Pakistan, Sudan, Syria, and Turkey. In addition to WHO Secretariat members from the Regional Office and headquarters lecturers and discussion leaders were invited from the Netherlands and the United Kingdom of Great Britain and Northern Ireland.

The three principal themes for discussion were (1) professional training for mental health work (2) development of inpatient and extra mural facilities for treatment of psychiatric disorders and (3) influence of social and cultural factors on psychiatric disorders and their treatment.

New Nursing Course for Eastern Mediterranean Region

A four year course leading to a BSc degree in nursing—the first of its kind to be given in the Eastern Mediterranean Region—will be instituted by the Faculty of Medicine of the University of Alexandria in October 1954. The course will cover all aspects of nursing including public health work. There will also be a special diploma course for nurses who have already received their basic training enabling them to specialize in public health nursing, nursing education and administration.

Students will be accepted from all Eastern Mediterranean countries and 30% of the vacancies will be reserved for women from outside Egypt. The aim of the course is to train women for posts as senior administrators and teachers of nursing for although there are many excellent nursing schools in the Region it is difficult to obtain advanced training for administrative posts.

This project is the result of long term planning to raise health standards by the Ministry of Health of Egypt, the Faculty of Medicine of the University of Alexandria and the WHO Regional Office for the Eastern Mediterranean. The original teaching staff will consist of five nursing instructors provided by WHO while fellowships will be granted to trained women from Egypt to enable them to qualify abroad to take over the teaching posts when the WHO staff is withdrawn. WHO will also contribute teaching materials and equipment. Once the course gets under way it will grant further fellowships to permit students from the Eastern Mediterranean Region to attend.

Yemen Becomes 81st Member of WHO

Yemen became the 81st Member of WHO on 20 November 1953 when Prince Saif al Islam Abdullah, Minister of Foreign Affairs of the Yemen

and leader of the Yemen delegation to the VIIIth General Assembly of the United Nations signed the Constitution of the World Health Organization at United Nations Headquarters in New York

Seventh Session of the Directing Council of PASO

The seventh session of the Directing Council of the Pan American Sanitary Organization was held from 9 to 19 October 1953 in Washington D.C. under the chairmanship of Dr Hernan Urzua Director-General of the National Public Health Service of Chile. The Council is composed of delegates from the 21 American republics and of representatives from France, the Netherlands and the United Kingdom of Great Britain and Northern Ireland on behalf of their territories in the Western hemisphere. It serves simultaneously as WHO Regional Committee for the Americas.

A budget of \$2,100,000 was voted for 1954 for continuation of the health programmes to be carried out with the guidance of the Pan American Sanitary Bureau. An additional \$10,039, allocated for 1954 to the Region of the Americas by WHO, will also be available. In its report, the Council called for increasing emphasis on the training of health personnel; it also stated that the Bureau should give technical guidance in the planning and operation of programmes for the eradication of such communicable diseases as urban yellow fever, malaria, smallpox, syphilis and yaws.

The Council considered the problem caused by the growing multiplicity of agencies that approach various governments in connexion with public health programmes. A resolution was adopted in which the situation was reviewed and stating that the Council considered that such programmes for the Americas should be concentrated in the Pan American Sanitary Bureau which had been created for that purpose and which also acted as the regional organization for WHO.

Views on WHO

A Great Leader in World Health

A recent issue of the *American Journal of Public Health* (1953 43:9 1172-3) contains a leading article on Dr Brock Chisholm, former Director-General of the World Health Organization.

When the World Health Organization was organized a little over seven years ago, it was unusually fortunate in two respects. Its sponsors framed a constitution of the widest possible scope envisaging public health in its most modern and constructive sense, and the Interim Commission was able to find in Brock Chisholm a leader of unparalleled capacity.

Dr Chisholm's retirement after nearly two years with the Interim Commission and five years as Director-General of the World Health Organization closes a notable chapter in the history of public health and of international collaboration. His dealings with individuals were directed by the skill of an experienced psychiatrist, and his vision and courage in program planning were characteristic of a leader of inherent and essential greatness.

In Dr Chisholm's farewell address to the Sixth World Health Assembly last spring, he pointed out

that the glaring contrast between the tremendous sacrifices we are forced to make for piling up instruments of war and destruction and the insignificant amount of energy and money we spend for constructive purposes is symbolic of the challenge modern man is facing.

He appreciated the possibilities offered by the machinery set up at Geneva and noted that a harmonious relationship between a world-minded Assembly, an independent Executive Board and a free and reliable secretariat can overcome practically all handicaps which might interfere with the fullest realization of WHO's potentialities. Furthermore, Dr Chisholm never visualized the health program as a separate entity. He understood that there has been no social progress if the physically rehabilitated people merely swell the ranks of the unemployed, dissatisfied or hungry. The extra labour gained through such campaigns will mean progress only if the people freed from disease are assured of capital investment for production and stabilized markets for distribution if they are thus guaranteed sufficient work and in addition given adequate educational and cultural facilities for themselves and their children. He therefore co-operated to the fullest extent with the FAO, with UNESCO and with all the other international agencies concerned with

human welfare. We owe Brock Chisholm a deep debt of gratitude for steering the World Health Organization so wisely and skillfully on the first stages of its far flung voyages.

The choice of Dr M G Candau as Dr Chisholm's successor is an unusually wise one. We all look forward confidently to continuing progress in the coming years.

CARE and WHO in South East Asia

A joint undertaking of CARE and WHO aimed at improving the health services of certain countries in South East Asia was the subject of a comment published in a recent number of the *Journal of the American Medical Association* (1953 152 1045).

"During the recent convention of the American Medical Association the Board of Trustees endorsed a joint project of CARE and the World Health Organization to provide needed equipment and supplies to India and neighboring countries. The Trustees' action was followed by one of the Woman's Auxiliary which adopted a resolution that also pointed up the need for such improved medical services. The project offered by CARE and the World Health Organization is based on a recent WHO survey that established that in India alone there are some 80 hospitals, medical schools, nursing schools and similar institutions and 210 more in neighboring countries with a total of some 42 000 beds which are in urgent need of the most basic supplies including

bed linen, surgical instruments, simple laboratory equipment and textbooks on materia medica, pathology, latest surgical and treatment techniques, and similar subjects. A hospital for patients with tuberculosis in Ceylon for instance was found to be lacking sterilization equipment for instruments and utensils and for the notoriously bad drinking water of the community. Two natives were kept busy boiling water all day to meet the need. A nursing school in India was providing all of its instruction with the aid of a single anatomic atlas dog-eared with age; its request was for books, just one text book each on public health, nursing techniques, therapeutical methods, etc. The Ramakrishna Hospital in East Rangoon which treated more than 76 000 patients last year, not counting patients readmitted, has 16 physicians on its staff, only 4 of whom the residents and interns are paid. The other 12 serve gratuitously at the hospital and help make up the constant deficit of the institution with the income from their private practice.

"The individual physician of India, Burma and Thailand often is lacking in health tools which the abject poverty of his country prevents him from obtaining. Where large portions of any population are subjected to constant hunger and want, the health standards of a nation are bound to suffer not merely as the result of general malnutrition but because of the lowered resistance to all forms of disease, whether epidemic or endemic in nature. Help in such instances is especially appreciated and of almost incalculable value."



CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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human welfare We owe Brock Chisholm a deep debt of gratitude for steering the World Health Organization so wisely and skillfully on the first stages of its far flung voyages

The choice of Dr M G Candau as Dr Chisholm's successor is an unusually wise one We all look forward confidently to continuing progress in the coming years

CARE and WHO in South East Asia

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CHANGING CONCEPTS IN THE EPIDEMIOLOGY AND CONTROL OF THE TREPONEMATOSES*

It has become widely recognized in recent decades that despite the medical, technical, social and economic advances of the past century syphilis, yaws and pinta represent a group of infections which continues to afflict a large proportion of the world's population (fig. 1). Regions where they are prevalent must be considered as "so many reservoirs of world infection exactly as are foci of malaria or yellow fever"¹. Furthermore, since the treponematoses are closely related to each other biologically and immunologically and since the causative treponemes are all susceptible to penicillin, there is an increasing demand for a comprehensive world view of these infections as a group which would replace a narrow approach based on differences in clinical syndromes, mode of transmission or other characteristics peculiar to one or another. From the point of view of public health and of communicable disease control, there are definite advantages in the group concept which has in fact gained acceptance by scientists, health workers and administrators in many countries and has been the basis for practical measures taken to combat the treponematoses in different regions of the world over the past few years.

The study of the natural history of the treponematoses and their control require further definition of the relationship between the host and the parasite on the one hand and the host and his physical, social and economic environment on the other hand. Significant scientific developments and discoveries of recent years have added to our knowledge of these relationships and the introduction of new and more effective health techniques has resulted in a basic reorientation in treponematoses control.

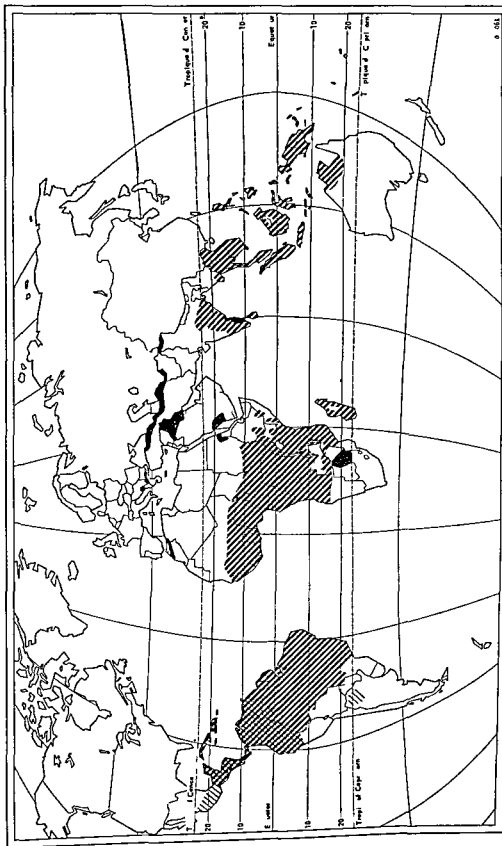
The isolation in the laboratory of a variety of strains and types of treponemes from various endemic areas of treponematoses in the world, the ability to maintain treponemes alive on artificial media for some time, the production in the experimental animal of relatively tissue free and concentrated treponemal antigens and the discovery of true immobilizing and agglutinating antibodies in the serum—as distinguished from the reagin type of "antibody" determined by usual serological methods—all these advances have greatly expanded our knowledge of the immunological and antigenic relationships among the different treponematoses.

Since there is no intermediate host to attack in the treponematoses and since immunization procedures are impracticable at the present time, the principal approach to treponematoses control remains case finding and treatment which must be carried out simultaneously with efforts to raise the social, educational and economic level of the population concerned.

*This paper is a member of the Chancroid has been prepared by Dr. T. Guthe, Chief, Venereal Disease and Treponematoses Section, WHO, and Dr. R. R. Wilcox, WHO Treponematoses Consultant.

¹Quid in H. H. H. (1946) *Treponematoses*. New York: p. 116.

FIG 1 GEOGRAPHICAL DISTRIBUTION OF THE NON VENEREAL TREPONEMATOSSES



Yaws Pinta Endemic syphilis and similar conditions
 Venereal syphilis which is more or less prevalent throughout the world is not shown

NATURE AND EXTENT OF THE TREPONEMATOSES

EPIDEMIOLOGICAL HISTORY

The question of the antiquity and origin of the treponematoses is one of the classical controversies of medical history. The finding of syphilitic bones from ancient peoples has given rise to various theories as to the geographical cradle of these infections: some investigators considering it to be in the Americas, others in Europe, the Near East or Africa. The recent discovery of possible

bejel lesions in ancient bones found in the Eastern Mediterranean region has further emphasized this problem and has focused particular interest on the hypothesis of a single origin of the treponematoses. According to this hypothesis, one ancestral type of treponeme might through the ages gradually have adapted itself to widely differing environments in which climatic, ethnological, social, economic and other factors have differently conditioned the

FIG. 2. ANCIENT SYPHILITIC SKULL FOUND IN IRAQ.



The antiquity of the treponematoses has for many years been discussed by medical historians. Above is a skull believed to date from the first half of the first millennium A.D. which bears evidence of gummatous osteoperiostitis. This skull was discovered in 1939 near Zakho, Iraq, by the Government Archaeologist at the time, Seton Lloyd. In a recent study made in connexion with a WHO/UNICEF bejel-control project, Dr. F. Kail of Vienna and A. De Froe, Director of the Anatomical Department of the Royal College of Medicine, Baghdad, attribute the pathological changes in the skull to a treponematoses.

In this domain, too, rapid strides have been made in recent years. The introduction of penicillin as an effective treponemicidal drug to replace the toxic arsenicals and the development of repository penicillin preparations which will cure a high proportion of early infectious cases with a single injection and which will also arrest the advanced disease have made it possible for patients to be treated on an ambulant basis. Penicillin will protect against infection on actual exposure and it is also effective when administered during the incubation period of a treponematoses. This has permitted the administration of the antibiotic to contacts without overt signs of treponematoses in an effort to sever the chain of infection as rapidly as possible and this procedure has become an important epidemiological technique. The triple effect of penicillin—curative in manifest disease, preventive or "abortive" *during the incubation period and prophylactic against exposure to contagion*—has therefore made it a medical agent which can be successfully used not only in individual patients in clinical practice but also as an important public health weapon for the general improvement of health conditions by means of mass control programmes wherever the treponematoses are highly prevalent.

In the two articles which follow, the nature and extent of the treponematoses and the new methods for their control are considered in some detail in order to provide background for subsequent sections on what has been accomplished and what remains to be done.

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treponemes, their mode of spread and the susceptibility of the host, with subsequent development of variations in the resulting clinical syndromes in man

Whatever their geographical or biological origin the treponematoses have been an international health problem throughout history and epidemic outbreaks have been recorded for centuries. An infection similar to syphilis was known as "seamen's jealousy" in Chinese coastal towns in ancient times and the Biblical plague of Moab has been identified as syphilis. To what extent it is possible to identify with syphilis an infection prevalent in eastern Europe many decades before the return of Columbus to Europe from the Americas at the end of the 15th century—and of which wooden illustrations of lesions are still to be seen in Cracow, Poland—remains under discussion.

The actual nature and extent of *Morbus Gallicus* which spread epidemically under many names in Europe after the rediscovery of the New World by Columbus and subsequently as a result of the travels of Vasco da Gama and other explorers to the Orient are one of the classical examples of an international epidemiological problem. Medical historians are still debating whether this framboesia-like disease was introduced or re-introduced into Europe from Africa when the slave trade was opened up or whether it was brought from the West Indies by Columbus and indeed whether it was a true syphilitic infection which subsequently became modified after its transfer to the ancient world. True framboesia, or yaws as known today was not identified until early in the 17th century in the West Indies and in the 18th century in Brazil although a description was given as early as 1558 of a yaws-like disease among Indian children in Rio de Janeiro and other areas of Brazil to which it may have been imported from Africa. Since then yaws has gradually become recognized as an ubiquitous plague through

out the tropical belt. The disease described as early as 1519 by Hernan Cortes during the period of Spanish conquest in the Western hemisphere was probably not yaws but the "blue stain disease", or pinta identified in recent years as another member of the treponematoses group.

There is historical evidence that many of the recorded epidemics of syphilis perpetuated themselves as extraveneal infections among children and that this mode of transmission was often mixed with venereal transmission among adults. The sabbens or

Scottish yaws, of the 17th century after the time of Cromwell was apparently a mixture of venereal syphilis and such "syphilis innocens" transmitted through drinking bowls, towels and other utensils and by suckling sleeping with infected persons etc. The last case of sabbens was reported in Britain a little more than one hundred years ago. The Norwegian "radesyge" of the 16th century has also been recognized as an extraveneal syphilitic disease, and the spirocolon of 19th century Greece and Russia was of a similar nature. In the 18th century again, Canada suffered outbreaks of syphilis among Indian tribes at St. Paul's Bay and Lake Huron where the disease was very prevalent among children.

Certain medical and social practices have undoubtedly also contributed to the spread of non-venereal syphilis over the centuries. An epidemic of syphilis is known to have resulted from cupping operations at the public baths in Moravia in 1587, and in France a midwife with a chancre on her finger infected 50 pregnant women in 1727—an event not uncommon before the invention of rubber gloves. In the days before artificial milks were used for baby feeding the wet nurse also contributed to the spread of the disease. For example more than 40 women and children and several men developed syphilis in an epidemic in France in 1752 as a result of infection among wet

nurses who had developed nipple chancres through contact with syphilitic children. Other children in due course infected their mothers and the husbands at the end of the chain of transmission acquired the disease venereally from their wives. There are several accounts of the early periods of smallpox vaccination in which the arm-to-arm technique of vaccination is known to have resulted in the direct spread of syphilis from persons with infectious lesions. The introduction of the eustachian catheter was also followed by a number of cases of transmitted syphilis. Chancres resulting from circumcision procedures have frequently been reported in the literature. And in modern times blood transfusion and the tattooer's needle have occasionally been responsible for the transmission of syphilis.

THE PRESENT PROBLEM

The principal treponematoses—syphilis, yaws and pinta—are infections resulting from the interplay of the environment, the human host and the specific micro-organism concerned which may be *Treponema pallidum*, *T. pertense* or *T. carateum*. The fact that all the treponematoses except sporadic syphilis are essentially non venereally transmitted has been held to account for some of the differences (i.e. non occurrence of systemic cardiovascular and neurological involvement) between them and venereal syphilis, but it does not explain the variations among the other treponematoses themselves.

In contrast to those of syphilis, the treponemes of yaws and pinta are apparently not transmitted sexually and the reciprocal partial immunity among the treponematoses which may represent a natural barrier to the introduction of venereal syphilis in areas in which the non venereal treponematoses are prevalent will gradually disappear once the latter have been controlled. However the ultimate pattern of venereal transmission

may even in developed countries revert to an extravenereal pattern given a return to conditions of poverty, overcrowding, war or a combination of factors which are conducive to the non venereal mode of transmission. Thus local outbreaks of asexual syphilis among children were recorded in Budapest in 1948² and in Chicago in 1949³ and were in both instances attributable to unfavourable social conditions. On the other hand examples may be cited of males from underdeveloped areas who have acquired venereal syphilis on visits to large cities and who have venereally infected their wives on their return to their homes; the wives in turn have infected the children non venereally and this has given rise under favouring environmental conditions to an epidemic of non venereal syphilis among the children in the area.

Epidemic or endemic syphilis cannot continue to exist by non venereal transmission unless numerous environmental factors further this form of spread. There is evidence that, with improvement in hygienic conditions and with general social and economic advancement, the non venereal type of syphilis has died out in many parts of the world although important areas where non venereal transmission predominates still exist in Europe, the Middle East, Asia, Africa, the Americas and the Western Pacific. Experience in recent years has shown, however, that active communicable-disease control programmes with emphasis on health education, environmental sanitation and mass treatment with penicillin can accelerate the social and economic process by which the suppression of endemic syphilis—or of any of the other non venereal treponematoses—may be furthered. And once the non venereal treponematoses have been sup-

² Fényi E. (1948) *Orv. Lapja*, 4, 616.
³ Eisenberg, H., Plotke, F. & Baker, A. H. (1949) *J. Amer. Dis. Inform.* 30, 7.

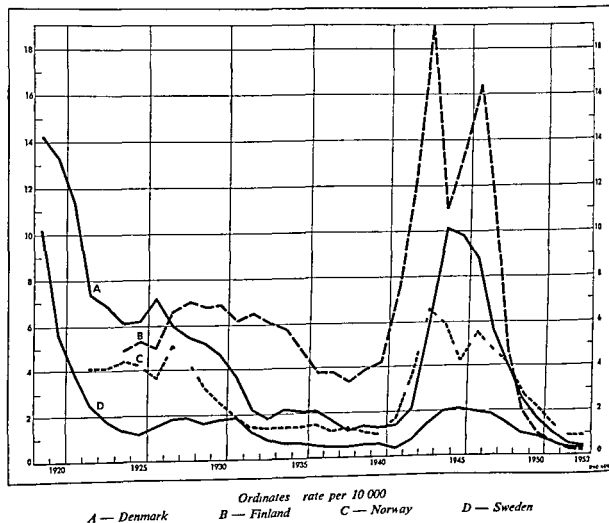
pressed in populations with low socio economic standards, emphasis will shift to new problems of disease control

VENEREAL SYPHILIS

Attempts to secure detailed information concerning the actual extent of the problem of venereal syphilis throughout the world suggest that at least 20 million cases exist, although the data available are scattered and not always reliable. It is not always possible

though desirable for each area and country to be fully aware of its treponematoses problem and to include data on infectious syphilis at least, in local and national health statistics. Even an approximate estimate of the disease problem to serve as a basis for planning control programmes is not always obtainable. In applied serology there may also be difficulties, leading to an exaggerated opinion of the prevalence of syphilitic infection in tropical and semi tropical areas owing to the fact that seropositivity may be the result of one of the other treponematoses

FIG 3 ANNUAL CASES OF PRIMARY AND SECONDARY SYPHILIS PER 10 000 POPULATION REPORTED IN DENMARK, FINLAND, NORWAY, AND SWEDEN, 1919-53



(true seropositivity) or of false positive reactions caused by non treponemal infections

In spite of these limitations fairly reliable data are available for some countries where venereal-disease control has been organized for some time as for instance in the Scandinavian countries where such activities date back to the 17th century. In these and similar areas where it has been possible to measure trends over a period of time it has been observed that venereal syphilis remains predominantly an urban disease in "normal" times. It invades rural areas during times of poverty war and occupation and with migrating populations. Following every major war its prevalence decreases with a return to normal economic and social conditions and with a stabilization of the population. This decline in prevalence may be accelerated by systematic case finding by adequate treatment of cases and through educational efforts. The incidence of early syphilis in the Nordic countries is illustrated for the period covering both World Wars in fig. 3 and it is interesting to note the syphilis epidemics which occurred there during the war periods and in the immediate post war years. The drop in the incidence of early infections was similar in Denmark and Norway after both the First and the Second World Wars after the Second however the rapid decline persisted and the incidence reached a minimum level without the long secondary drawn-out process which spanned almost two decades after the First World War.

In post war Germany where military occupation instability of the population and many other factors might have tended to maintain the incidence of venereal diseases at a relatively high level a continued decrease in the rate of early syphilis has been experienced following a maximum incidence in all three western occupied zones in 1947. A similar rapid decline seems to have followed the post war peaks noted in Canada

Finland France Italy Poland the United Kingdom of Great Britain and Northern Ireland and several other countries although it is difficult to appraise the situation accurately since the statistical information is sometimes based only on patient loads at outpatient departments of venereal-disease clinics which may not directly reflect quantity but rather indicate a general trend in a given area.

The trend of syphilis incidence in the USA over the past few years is of considerable interest particularly in the light of the evaluation made by the WHO Syphilis Study Commission to the USA in 1950⁴ of the venereal-disease-control programme there after the introduction of penicillin. This trend is illustrated in fig. 4 and it will be seen that a rapid decline occurred in early infectious syphilis after penicillin had been introduced on a considerable scale.

It is an inherent feature of the problem of venereal syphilis that, regardless of general prevalence geographical distribution peace or war the majority of early cases occur in the productive age groups with a preponderance among young females who are often infected at an earlier age than the males. This age and sex distribution may be seen in table I.

Despite the rapid decline in the incidence of early syphilis in several western countries after the Second World War foci have continued to persist in some areas or among certain population groups in those countries. Relaxation of venereal-disease-control efforts misconception concerning the ease of modern therapy and lack of adequate maintenance of case finding and follow up work may even lead to recrudescence of the disease. It has recently been reported that in 15 States of the USA the incidence of syphilis increased in 1953⁵. Long range planning and sus

⁴ *Wld Hlth Org techn. R p* Ser 1950 15
⁵ *Clin J C* (1953) Presentation before annual meeting of American Society for Investigative Dermatology

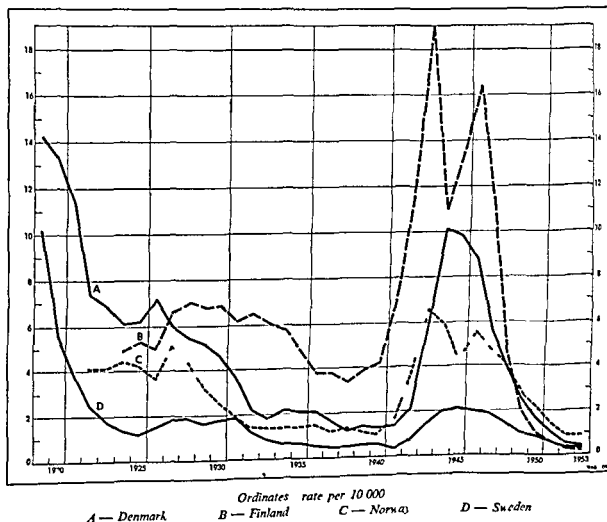
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From the international point of view the extensive reservoir of syphilitic infection remaining in vast regions in several parts of the world is on the other hand of greater significance particularly in areas where facilities for diagnosis and treatment are limited and where venereal disease-control activities have not previously been organized on an appreciable scale. For example the prevalence of venereal syphilis has been reported⁴ to vary from 14 1/ to 32 9/ of the population in certain areas of Africa syphilis surveys in South East Asia have shown a prevalence of seropositivity ranging from 0 6/ to 31/ in different population groups in Afghanistan from 2 4/ to 25 4/ in Burma from 0 5/ to 11 9/ in Ceylon and from 5/ to 50/ in India in the Eastern Mediterranean region recent extensive surveys have shown a range in Egypt of from 0 2/ to 27/ in Ethiopia of from 4 2/ to 82/ and in Saudi Arabia of from 8/ to 22/ and surveys of large population groups in the Americas have shown a range of from 12/ to 15/ There can therefore be no doubt that millions of cases of syphilis remain in these areas

It has been found that the prevalence of venereal infections particularly of syphilis is relatively higher in ports than in inland cities both in developed and in under developed areas. This raises the special problem of the possible transfer of infection from one country to another and has therefore been the object of particular international attention which is exemplified in the Brussels Agreement of 1924 for the treatment of seafarers in foreign ports (see page 89)

In short although there has been an initial significant decrease in early venereal syphilis in some parts of the world since the Second World War the problem of syphilis continues to be a health hazard in many other regions

at a time when rapid transport by land sea and air is now available when desert treks and migrations have increased considerably in volume and when commercial intercourse between countries is accelerating under the vast economic development and expansion programmes in many underdeveloped areas

NON VENEREAL TREPONEMATOSSES

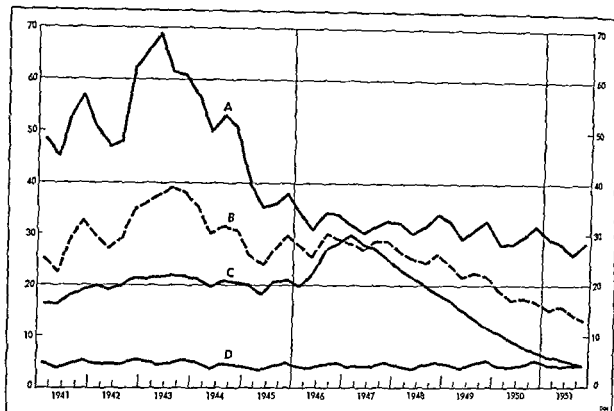
The decline in early venereally acquired syphilis in some parts of the world in recent years has called increasing attention to the continued existence of endemic hyper endemic and epidemic areas of non venereal syphilis yaws and pinta. Although precise statistics are still lacking, there is a growing realization of the significance of these infections as public health problems and survey and control programmes—sometimes with international assistance—have begun to give some idea of their widespread distribution and considerable prevalence

Endemic syphilis and similar conditions

Syphilis has remained an ordinary communicable disease in several areas of the world transmitted non venereally by direct contact and by indirect transfer of *T. pallidum* among children and adolescents through their play and by drinking vessels and common eating and other household utensils under primitive crowded substandard conditions of living. Non venereal syphilis in its endemic form is an infection with epidemiological features which have furthered its spread primarily among children to such an extent that the epidemiological term "endemic syphilis" has by common usage become identified with the mere presence of the clinical syndrome most frequently found as the first sign of this childhood disease—namely oral mucous patches. In Bosnia Yugoslavia such syphilis among children was widespread until very recently and in

⁴ Unpublished reports of WHO advisers or consultants (1949-57)

FIG 4 CASES OF ACQUIRED SYPHILIS IN THE USA (STATES AND TERRITORIES)
BY FISCAL YEAR PERIOD 1941-51 *



Abscissae fiscal year quarters
Ordinates thousands of cases

A — Late and late latent
B — Early latent
C — Primary and secondary
D — Congenital

TABLE 1 AGE DISTRIBUTION OF 4 145 REPORTED
CASES OF PRIMARY AND SECONDARY SYPHILIS
IN NEW YORK CITY 1943

Age (years)	Number with primary or secondary syphilis			Percentage with primary or secondary syphilis		
	males	females	total	males	females	total
under 15	4	14	18	0.1	1.1	0.4
15-9	306	305	611	11.4	70.9	14.8
20-24	795	543	1 338	29.6	37.3	39.4
25-29	611	288	799	19.0	19.8	19.3
30-34	365	152	517	13.6	10.4	12.1
35-39	253	76	329	9.4	5.2	8.0
40-44	195	37	232	7.3	2.5	5.6
45-49	120	21	150	4.8	1.4	3.7
50-54	71	15	86	2.6	1.0	2.1
55 and over	59	6	65	2.2	0.4	1.6
Total	2 688	1 457	4 145	100.0	100.0	100.0

* Known military cases are excluded

From the international point of view the extensive reservoir of syphilitic infection remaining in vast regions in several parts of the world is on the other hand of greater significance particularly in areas where facilities for diagnosis and treatment are limited and where venereal disease-control activities have not previously been organized on an appreciable scale. For example the prevalence of venereal syphilis has been reported* to vary from 14 1/6 to 32 9/10 of the population in certain areas of Africa. Syphilis surveys in South East Asia have shown a prevalence of seropositivity ranging from 0.6% to 31% in different population groups in Afghanistan from 2.4% to 25.4% in Burma from 0.5% to 11.9% in Ceylon and from 5% to 50% in India. In the Eastern Mediterranean region recent extensive surveys have shown a range in Egypt of from 0.2% to 27% in Ethiopia of from 4.2% to 82% and in Saudi Arabia of from 8% to 22% and surveys of large population groups in the Americas have shown a range of from 12% to 15%. There can therefore be no doubt that millions of cases of syphilis remain in these areas.

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*Unpublished reports of WHO directors of consular units (1949-57)

FIG 5 EXAMPLES
OF MODES OF TRANS-
MISSION OF NON-
VENEREAL TREPONE-
MATOSES



A — Common use
of drinking vessel
(the ibrik) in
Bosnia a method
of spread of en-
demic syphilis

(C I Grin Sa ajevo)



B — Transmission of jaws by direct skin contact of
body surfaces of African miners

(C I Hackett London)



C — Chancre of the breast in mother nursing
dichuchwa infected child having mucocutaneous
lesions in the oral region

(J F Murray Johannesburg)



Oral mucous lesions of non-venereal syphilis (Bosnia)
(E. I. Grn, S. Rajc)



Similar lesions in "njovera" (Southern Rhodesia)
(R. R. Wilcox, London)

the neighbouring republic of Serbia a more mixed venereal and non-venereal type of infection was found. Prior to the mass treatment campaign of 1948-52 there were an estimated 100 000 cases (5%) among the two million inhabitants of the rural areas of Bosnia. The high prevalence of infection among children and in the lower age groups in this area is illustrated in table II.

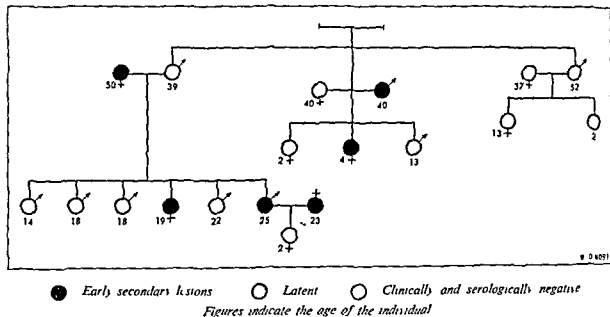
There are no essential differences between the tegumentary lesions of endemic syphilis and those of sporadic venereally acquired syphilis in adults and the symptomatology of both includes gummatous destruction of the skeleton. It is contended that cardiovascular and neurological involvement is present in the later stages of both. But the rarity of primary lesions and of congenital manifestations is one of the characteristics of

endemic syphilis and, since they occur in the early age groups their incidence is different from that found in an environment where a venereal mode of transmission prevails and where sexually mature adults rather than children represent the population at risk.

TABLE II. NEW CASES OF ENDEMIC SYPHILIS BY AGE GROUPS IN A BOSNIAN COMMUNITY

Age (yr)	Population	Early infectious cases	Cases per 1,000 of population
0-10	860	170	139.5
11-20	1,051	71	67.6
21-30	84	31	36.8
31-40	439	2	4.6
over 40	724	70	27.6
Total	3,909	244	62.5

FIG 7 ENDEMIC SYPHILIS IN A HOUSE-HOLD OF 19 MEMBERS (5 FAMILIES) IN BOSNIA 1951



This difference is at least partially explicable on epidemiological and immunological grounds: there is no evidence of a true difference in the strain, virulence, or tissue tropism of *T pallidum* in endemic or venereal syphilis.

Studies of the prevalence of endemic syphilis in crowded households with little living space show that there is a considerable likelihood of many family members becoming infected. The age and sex distribution in a typical household of this sort where two thirds of the persons living under the same roof were infected is shown in fig 7.

In small communities the daily contact among inhabitants is usually more intense than in larger villages and it has been found that the more compact the community the higher the infection rate since there are more opportunities for the transfer of treponemes. A survey of 322 Bosnian villages illustrated in the following tabulation shows a progressive decrease in the infection as the population in the villages increases.

Village population	Infected	Village population	Infected
less than 200	22.5	400-600	12.6
200-400	16.2	over 600	9.1

Since the exhaustive studies by von Düring⁹ on spirochaetosis in Mesopotamia and westward to the Mediterranean were made in 1896, a condition quite similar to if not identical with endemic syphilis has been described under the name of bejel by many investigators in various other parts of the Eastern Mediterranean region. Apparently the condition is of some antiquity but whatever its origin it is found almost exclusively among Arabs in remote primitive desert villages in Iraq, Syria and the Hashemite Kingdom of the Jordan where it has for many decades been recognized by the Bedouin as a common childhood and family infection. Epidemiological and pathological descriptions of endemic syphilis and bejel have also been given in recent years by workers in Iran, Saudi Arabia and other Eastern Mediterranean areas. It has been estimated that this type of infection may afflict a million or more persons in this region.

The early onset and the age and sex distribution of bejel are similar to what is found in endemic syphilis (see table II).

⁹Düring, E. von (1918) *Arch. Derm. Syph. (Berl.)* 61: 3

The clinical resemblance of the initial stages of bejel to those of endemic syphilis is striking and has been described by a number of investigators.^{8, 9, 10} The lesions are usually confined to the skin, mucous membranes and skeleton. Primary sores are extremely rare and involvement of the cardiovascular or nervous system in the later stages has not been demonstrated with certainty in large series of patients, although random reports suggest that it may occur. It has been stated that the fundamental distinction between endemic non venereal syphilis and bejel or bejel like conditions lies in the presence or absence of systemic neurological and/or cardiovascular involvement in the later stages of the disease. It is still not certain whether such involvement in endemic syphilis may not be attributable to cases of venereal origin in areas with mixed venereal and non venereal syphilis; it is also debated whether the isolated cases of similar involvement in bejel are due to the same cause.

Early reports of possible congenital bejel have not been confirmed where it has been possible to follow for any length of time children born of women seropositive at pregnancy. Darkfield positive mucous patches and skin lesions including anogenital condylomata are common early manifestations. Most patients go into latency after the early stages with subsequent development of late lesions of the skin and bone.

In bejel as well as in yaws and possibly in endemic syphilis there is a seasonal increase in the attack rate with the coming of summer and the warmer weather. Proximity to marshes or lakes may be among the physiographic factors facilitating the spread of infection in areas with poor hygienic standards although such factors appear to play a smaller role as environmental

sanitation improves. This has been demonstrated¹¹ in adjacent Iraqi villages inhabited by Kurds and Djbours respectively and where the conditions are remarkably different.

A treponemal infection called "njovera" and closely resembling endemic syphilis and bejel has recently been described¹² in Southern Rhodesia among the Karanga people in Africa. It is contended that bejel and njovera are identical and that both are in fact non venereal endemic syphilis. "Dichuchwa" has been described by McArthur¹³ Murray et al.¹⁴ and others as another endemic extravenereal treponematosis among the Bantu people of Bechuanaland; it appears to be mixed with venereal syphilis. In both these non venereal treponematoses—njovera and dichuchwa—primary lesions are rarely seen except as

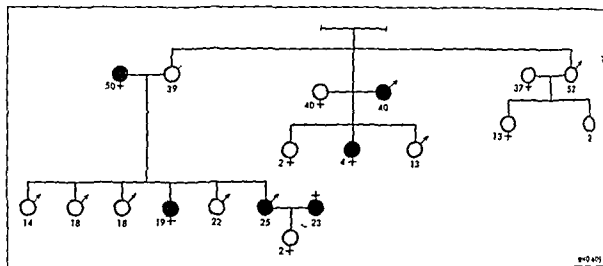
"throw back" transpositional lesions where a nipple sore develops in the mother from her infected child (fig 5c page 48). The combination of darkfield positive mucous lesions and condylomata is common in both conditions which are otherwise characterized by the typical history of infection in childhood, natural regression or rapid response to minimal treatment, typical gummatous lesions in later life and the occurrence of the infection as a family and household disease. Definite evidence has not been presented that cardiovascular or neurological involvement exists in either njovera or dichuchwa.

These are examples of non venereal treponematoses recently identified in Europe, the Middle East and Africa. There is increasing evidence of the existence in various other areas of the world of similar foci of endemic non venereal syphilis or bejel like conditions bearing many strange names. Such conditions have been identified in

337
Huselman, C. M. (1938) *A. & Derm. Syph.* (Chicago) 38
Hudson, C. H. (1938) *Amer. J. Trop. Med. & Hyg.* 675
Wheeler, R. R. (1953) *Glasgow med. J.* 34: 81

Caonka, G. W. (1953) *Br. J. Syph. & Derm.* 29: 95
Wheeler, R. R. (1951) *Lancet* I: 558
McArthur, D. C. (1933) *Amer. J. Syph.* 7: 3
Murray, J. F. M., Griener, A. M., Keen, P. & Schick, S. B. (1952) *Med. & Biol. (Lond.)* 6: 407

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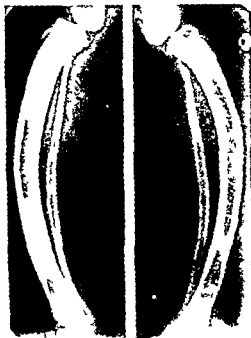
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Düring, E. von (1918) Arch. Derm. Syph. (B) 1: 61-3

FIG 9 BONE LESIONS IN YAWS



X ray of boomerang leg
aborigines of Australia
(C. J. Hack & L. D.)

Yaws is a disease of rural areas "at the end of the road" and its incidence is paradoxically associated with the presence of water. It is on the one hand recognized that in remote tropical rural villages with little water and limited cleanliness the attack rate of yaws is higher than in areas where water can be used more freely for general domestic purposes. On the other hand the attack rate increases significantly with the increased humidity of the rainy season. Under crowded and primitive conditions the infection is easily transmitted by direct contact with secretions from infectious lesions and probably also by indirect contact.

It is primarily a disease of childhood and adolescence. Its early onset is illustrated in fig 27 page 106. The primary sore or "mother yaw" often appears at the site of an abrasion and is seen on exposed parts of the body such as legs, arms, buttocks or face. The initial lesions are roughly analogous to those in syphilis but those representing the different stages of yaws may appear far closer to each other in time than

FIG 10 ULCERATING
TREPONEMATOSIS LESION
COVERED WITH FLIES



Purulent secondary infections result from flies under unhygienic environmental conditions
(F. Kall, Vienna)



Gross nasopharyngeal ulceration of five months duration with history of attack of dichuchwa in childhood which regressed spontaneously

(J F Murray Johannesburg)

Macedonia Greece Turkey, Lower Mongolia Tibet Tahiti, India, Saudi Arabia, Niger (French West Africa) and the Americas. They appear to be clinically and epidemiologically similar and are at least closely related, if not identical. It is suggested that an appreciable percentage of the population is affected in many areas and that the number of people at risk is in the millions.

Yaws

Yaws is conditioned in its distribution by physiographic economic, sanitary and other environmental factors and is highly pre-

valent in, and almost exclusively confined to the belt between the Tropic of Capricorn and the Tropic of Cancer (see fig 1 page 38). It is estimated that there are some 50 million cases of yaws in all its forms in the world.

In the Americas yaws is found in the northernmost countries of South America to only a limited extent in Central America (Panama) and most widely in the Caribbean area. It has been estimated that there are some 350 000 cases of yaws in Brazil where it exists in almost every State although it is not a major problem in the southern part of the country. The prevalence in 1948 in British and French Guiana was 26.4 and 41.3 per 100 000 of the population respectively. It is a health problem in rural areas of Venezuela Colombia and Ecuador. Probably the highest prevalence of yaws in the world existed, until recently in Haiti where more than 50% of the population were afflicted. There are reservoirs in the Dominican Republic Jamaica, and Tobago.

Africa has the largest single continental reservoir of yaws known. Conservative estimates suggest that there are about 25 million cases of yaws in tropical Africa.

In South East Asia yaws is prevalent throughout Indonesia and the peninsula comprising Malaya Thailand, and the States of Indo China. Its prevalence in Thailand and Indonesia where an estimated 12.15 million cases existed until recently is sharply declining under the mass control campaigns now under way in those countries. The disease is also found in scattered pockets in southern India Burma and Ceylon.

In the Western Pacific region, yaws is encountered in many islands. It is found in the Philippines New Guinea, and in the Gilbert Ellis Solomon and other island groups sometimes with a very high incidence. In Australia the *irrkintja*, or boomerang leg among aborigines has been identified as yaws by Hackett¹⁵.

Hackett C J (1936) *Trans Roy Soc Trop Med Hyg* 30 137

The manifestations of pinta are usually not physically incapacitating in the same way as those of syphilis, bejel and yaws. Pinta may however become a social and a mental health problem: the sufferer from pinta of the blue, white or mixed varieties may feel

stigmatized and may sometimes not be accepted for employment in urban areas. In this respect the infection is a hindrance to the full utilization of peasant labour in growing industrial areas or where there is urban development.

NEW METHODS OF CONTROL

PENICILLIN AS A PUBLIC HEALTH WEAPON

The management of treponematoses has been completely revolutionized since penicillin was first shown more than ten years ago to be effective against this class of infection^{18, 19} and since it was first successfully used by Mahoney and his co-workers²⁰ against venereal syphilis and then by other workers against endemic non-venereal syphilis,²¹ yaws,²² bejel,²³ and pinta.²¹ Numerous investigators have demonstrated that the use of penicillin brings about rapid disappearance of early lesions, healing of lesions of the skin and mucous membrane, reversal to seronegativity and in late manifestations an effect equal to or better than that observed with metal chemotherapy. Long term studies in syphilis² have shown that, when adequate amounts of penicillin are used, adjuvant therapy with arsenicals and bismuth will not improve the clinical and laboratory results (fig. 12, page 57).

T. pallidum is one of the most sensitive micro-organisms known. As little as 0.0025 unit of penicillin per ml of serum will immobilize 50% of a given number of treponemes within 16 hours; yet in order to kill treponemes they must be exposed to penicillin in the blood and tissues for a longer time than most other micro-organisms. After intramuscular injection the concentration of penicillin in the tissues increases in a definite relationship to that in the serum and the ultimate concentration in the infected organs is not appreciably lower than that in the circulating blood. The amount of penicillin required to kill the treponemes in the host depends on their number and it is believed that they are most numerous in the secondary stage of syphilis before the immunobiological processes have come fully into play and the refractory stage has been reached. It has been established that the "minimum theoretical therapeutic" penicillin concentration in the blood is approximately 0.03 unit per ml. Although it has been calculated that such a concentration maintained for 96 hours should be sufficient, this treponemicidal level should be maintained for approximately one week in primary and two weeks in secondary syphilis to avoid the risk of any residual treponemes recuperating and multiplying anew. It has not been shown that the treatment of syphilis is rendered more effective by maintaining a higher penicillinaemia or

¹⁸ Liverpool School of Tropical Medicine 44 h A 1 R port
Aust J 1940—July 31 1943 p 9

Loun E. M. & Collie H. O. J. (1943) *Ann. N. Y. Acad. Sci.* 37: 200

Mahoney J. F. Arld R. C. & Harris, A. (1943) *J. Am. Med. Assoc.* 24: 355

Grin, E. I. (1953) *Epidemiology and control of endemic syphilis: report on mass-treatment campaign in Brazil, Geneva World Health Organization. Attagaph S. I. N. 111*

F. di y. G. M. Hill, K. & M. Johnson A. (1944) *A. J. Surg.* (Lond.) 154: 795

Akr. w. F. (1949) *B. J. Ven. Dis.* 25: 115

R. m. C. R., K. (chen, D. K., Marquez F. & Varela, G. (1952) *J. Clin. Med.* 18: 137

Sh. fer J. R. & U. D. n. L. J. (1954) *B. J. Ven. Dis. Org.* (in press)

the corresponding lesions in syphilis. Generalized secondary framboesides of the skin and lesions of the bone and joints may appear a few weeks after the initial lesion and persist for years, with intermittent periods of apparent recovery and relapse if no treatment is given. The plantar lesions known as crab yaws are particularly painful. Tissue destruction takes place earlier and is a more constant feature in yaws than in syphilis. Mutilation, permanent invalidism and incapacitation for work result in many instances (See fig 9 and 23).

Although standard scientific classification of yaws lesions and a generally agreed nomenclature must await future action by an international group of experts, the First International Symposium on Yaws Control convened by WHO in 1952 considered the immediate need for a simple general grouping of lesions as a basis for yaws control projects in the field, where lesions are often recorded by auxiliary personnel with limited medical training; this grouping was subsequently approved by the WHO Expert Committee on Venereal Infections and Treponematoses¹⁶.

The true clinical course of yaws and the relationship between its stages are still under discussion.

Pinta

Pinta is a public health problem in Mexico and Colombia where approximately 2% of the population are affected—with an estimated 250 000 cases in the former and 400 000 cases in the latter. It is also found in Argentina, Chile, Cuba, the Dominican Republic, Ecuador, Haiti, Peru, Venezuela and certain of the islands of the Antilles. It is not with any certainty known to exist in areas outside the Americas. Cases reported in other regions are more likely to be pintide yaws.

T. carateum was established¹⁷ as the causative agent of pinta in 1938. The disease is essentially one of childhood and is contracted early in life by direct and indirect contact with infectious cases. Its age distribution among series of untreated patients is illustrated in table III.

TABLE III AGE DISTRIBUTION OF PINTA IN 665 MEXICAN INDIANS 1952

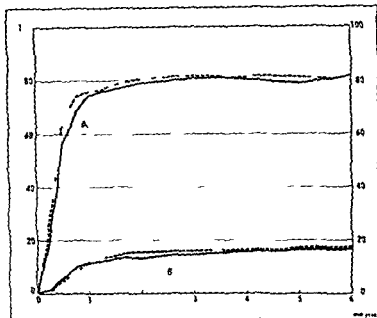
Age (years)	Number of cases	Percentage of total infected
1-5	60	9.0
6-10	143	21.5
11-15	134	20.1
16-20	115	17.3
21-30	141	21.2
31-40	47	7.1
41-50	17	2.6
51 and over	8	1.2
Total	665	100.0

Based on material from Reim C. R. Kitchen D. K. Marquez F. & Varela G. (1952) *J. Invest. Derm.* 18: 137.

Clinical manifestations are confined to the skin and there is no certain evidence of congenital disease or of systemic cardiovascular or neurological involvement. Primary pinta lesions are followed by secondary manifestations with localized and sometimes extensive dissemination as in syphilis. These give rise to copper-coloured pigmented areas which turn slate blue. Some of the pintides undergo depigmentation over extensive areas of the body surface, becoming "late" or "white" pinta which represents the terminal stage of the disease. The changes proceed in an irregular fashion with recurrence of secondary lesions periodically in the late stages of the disease and with a possible intermingling of all varieties of dyschromia, hypochromia and achromia in the same patient.

¹⁷ Saenz B., Grau Triana J. & Alfonso Armenteros, J. (1938) *Arch. intern. Med.* 4: 112.

FIG 12. PENICILLIN ALONE COMPARED WITH PENICILLIN PLUS ARSENOXIDE AND BISMUTH IN THE TREATMENT OF SECONDARY SYPHILIS



in one or a few intramuscular injections. This has made for a more rational utilization of penicillin from the point of view both of therapy and of economy. It is however of paramount importance for the duration of the resulting penicillinemia that such PAM preparations should have certain minimum characteristics for instance diffusion from the intramuscular depot into the blood and tissues should take place with reasonable and defined slowness notwithstanding the fact that individual variations have been observed in the rates of resorption and excretion through the kidneys. Certain minimum physical and other requirements which PAM preparations should meet have therefore been specified by the WHO Expert Committee on Venereal Infections and Treponematoses.²⁸ The desirability of following these international recommendations has been emphasized by the fact that several sub standard PAM preparations have been found on the interna-

tional market. These may result in inadequate treatment of patients and excessive relapse rates.

Recently new repository penicillin salts such as *N,N* dibenzylethylenediamine dipenicillin G and *N* benzyl β phenylamine penicillin G have been introduced which alone²⁹ or in combination with other penicillin salts³⁰ may give a penicillinemia for several weeks with smaller doses than are necessary with PAM. Under WHO auspices these salts are at present under clinical trial in all the treponematoses in several parts of the world. These studies will supplement the relatively few data which have been published on this type of therapy and which have so far been confined to syphilis. A report on the first observations of the efficacy of *N,N* dibenzylethylenediamine dipenicillin G in yaws is in preparation. Fig 13 shows the duration of the penicillinemia re-

Shafer J. R. & Smith, C. A. (1954) *Bull. Wild Health Org.* (in press)

Rein, C. R., Buckwalter, F. H., Mann, C. H., Landy, S. E. & Flax, S. (1953) *J. invest. Derm.* 21: 435

²⁸ *W. J. Health Org. Tech. Rep. Ser.* 1952: 43: 55

that there is any advantage in high, intermittent, peak penicillin concentrations in the serum or tissues²⁶. The early clinical and laboratory studies were made particularly on syphilis, but several subsequent studies confirm that there are no essential differences in this respect between syphilis and the other treponematoses, although certain minor variations have been observed in penicillin sensitivity among strains of treponemes isolated from endemic syphilis bejel and yaws.

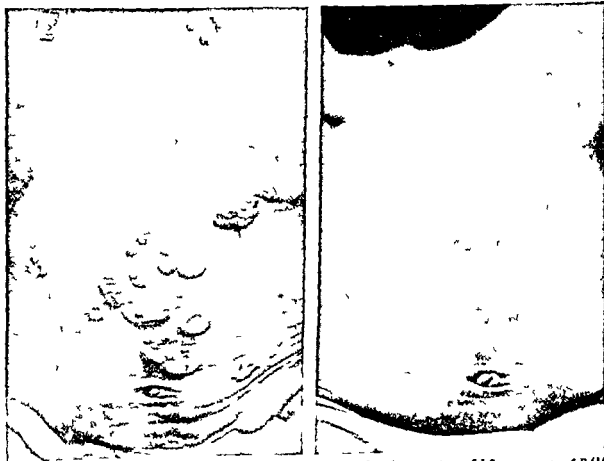
The required penicillinaemia of long duration can be obtained with different penicillin salts and preparations, provided that the

dosage is adjusted to their characteristics and that the variables in the time dose relationship of penicillin therapy are taken into account. Aqueous penicillin G injected several times daily during treatment necessitates hospitalization and is impractical for physician, hospital, and patient alike. It will give intermittently high blood-concentrations and a large proportion of the penicillin will be wasted. The introduction by Buckwalter & Dickson²⁷ of a preparation of procaine penicillin G in oil with aluminium monostearate (internationally known as PAM) provided a practical product which gives a penicillinaemia of long duration when administered

Eagle, J. L., Fleischmann, R. & Levy, R. (1953) *J Lab Clin Med* 41: 122

Buckwalter, F. H. & Dickson, H. L. (1948) *J Amer Pharm Ass* 37: 472

FIG. 11 IMMEDIATE EFFECT OF LONG ACTING PENICILLIN (PAM) IN THE TREPONEMATOSIS



Maculopapular secondary lesions of jaws before and three weeks after injection of 1.2 mega units of PAM (K. R. Hill Kingston Jamaica)

anaphylactic shock in allergic individuals have been reported²³

From the point of view of the patient, the physician, and the dispensary and from that of health insurance systems and health administrations responsible for clinic programmes and mass treatment campaigns it is essential that the treatment, besides being without frequent serious side-effects be effective inexpensive and capable of being completed within a short time. An assessment of these four factors in different types of therapy in secondary syphilis is given in table IV page 60

The practical advantages of PAM brought out in table IV are undoubtedly responsible for the fact that this is at present the preparation of choice in the treatment of syphilis and the other treponematoses. This was confirmed by a recent worldwide survey made by WHO which showed that more than 80% of 277 leading venereologists and clinics relied on PAM alone in treating early syphilis and by the technical discussions at the Sixth World Health Assembly where PAM for treponematoses control was considered the drug which provided the maximum effect for the minimum expenditure²⁴

The medical world requires time and experience to clarify the details of dosage and administration of any new drug and PAM in the treponematoses is no exception. It has been demonstrated in the last few years that a progressive doubling of the dosage of PAM—and consequently of the cost—does not correspondingly prolong the penicillin aemia. On the other hand the amount of penicillin required in any particular case increases with the number of treponemes present and while only 300 000 units of PAM may be needed to cure most cases of early primary seronegative syphilis this amount may cure only some 50% 60% of

patients in the fully developed secondary stage in which larger amounts of PAM are required to obtain a higher proportion of cures. In individual clinical programmes of the "urban demonstration and training project" type fullest advantage should be taken of the properties of PAM using amounts of at least 2.4 to 4.8 mega units in the early stages of syphilis. In selective public health programmes against the treponematoses considerations of administration and expense must however be taken into account when large numbers of infected persons are involved as in mass treatment campaigns and operational research in pilot areas has shown that as low a dosage as is compatible with reasonable clinical efficacy can be given in one or a few sessions. Good results for the majority must of necessity be preferred to perfection for the few. It is this "calculated risk" approach which has made it possible for health administrations with the assistance of international organizations to finance and undertake large mass campaigns against the treponematoses. A minimum dosage of 1.2 mega units of PAM is recommended for adults by the WHO Expert Committee on Venereal Infections and Treponematoses for the treatment of the endemic treponematoses for venereal syphilis 2.4 mega units are recommended for primary and 4.8 mega units for secondary syphilis.

The availability of penicillin is thus the key to treponematoses control as was pointed out several years ago by the WHO Expert Committee on Venereal Infections²⁵. In the early days of its use it was available only at a high cost to the privileged few and many other diseases which were more immediately fatal had first call on the supply. Today it is produced in impressive quantities and the total world production in 1953 probably exceeded 500 tons corresponding to 300 000 000

W. H. Lewis, C. N. Kerland, I. A. Putnam, L. E. (1953)
A. (Biol. and Chemother.) 3: 891
Chron. Wld Hlth Org. 1953 7: 55

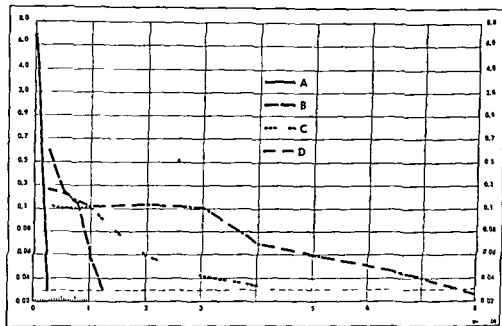
Off. R. Wld Hlth Org. 1949 15: 20

sulting from intramuscular injections of various salts and preparations of penicillin

In an appraisal of the value of penicillin in syphilis, Reynolds³¹ stated as early as 1946 that "penicillin is effective, but not always completely so. It is, in contrast to the metal chemotherapy non toxic, approaching the ideal in this respect. It is relatively easy to administer, and therapeutically effective

amounts can be administered in one or more repository intramuscular injections in a single session or, if convenient, in several sessions. On the other hand, evidence has accumulated that side effects may result in a small proportion of cases in allergic patients or in persons sensitized by repeated previous use (or misuse) of small doses of penicillin. Considering that the consumption of penicillin

FIG 13 PENICILLINAEMIA RESULTING FROM INJECTION OF VARIOUS PENICILLIN PREPARATIONS



Test dose 300 000 units given intramuscularly

Abcissae penicillinaemia duration in days

Ordinates penicillin units/ml of serum

A — Crystalline penicillin G aqueous solution

C — PAM (Procaine penicillin G with aluminium monostearate)

B — Procaine penicillin G aqueous suspension

D — DBED (N N dibenylethylenediamine dipenicillin G)

amounts can be given in a comparatively brief period of time. Since then, experience with penicillin therapy in the other treponematoses as well has steadily grown, and it may now be said that this statement requires only little modification to be applicable to them also. Indeed it has become clear with the passage of time that therapeutically effective

lin has risen tremendously in all parts of the world in recent years. It is noteworthy both that no penicillin resistance has so far been reported in the treponemes and that side effects are relatively infrequent and that their incidence is not increasing, being estimated by Kitchen et al³² at about 3%–5%. Isolated instances of death as a consequence of

³¹ Reynolds F W (1946) *Amer J Med* 1: 661

Kitchen, D N., Rein, C. R., Thomas F W & Spoor H J (1951) *Amer J Syph* 35: 578

mega units of penicillin of which the USA produced some 70%. Penicillin is therefore now more readily available for general use and with international assistance its beneficial effect in treating the treponematoses has been brought to millions of people (fig 14). Further production is planned or

An essential part of international aid to health administrations has thus been the supplying of penicillin for demonstration and training projects and for the first years of the mass treponematoses-control campaigns in underdeveloped areas

MASS TREATMENT CAMPAIGNS

Since yaws and other endemic non venereal treponematoses are found in rural and underdeveloped areas where medical facilities are absent or minimal their control requires a communitywide rather than an individual approach aimed at reducing the reservoir of infection as rapidly as possible to a level with which existing health facilities in the area can cope. Treponematoses-control efforts in such areas have been based on a wide application of penicillin by the entirely new public health technique of mass treatment campaigns. Since there is no immunization against the treponematoses and no intermediate host to attack and since facilities in rural areas are scarce this approach is the only possible one.

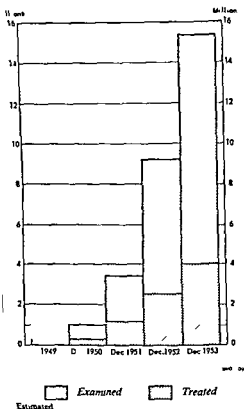
Stages of a Campaign

Mass treatment campaigns are developed in five main stages²⁴ the importance of each being determined by local conditions. These stages are

(a) general preliminary analysis of the problem (b) development of plans of operation (c) demonstration training and survey phase (d) expansion phase—the mass campaign proper—and (e) consolidation of the programme including its integration into the strengthened local health services.

An important factor in any mass treatment campaign is the initial establishment of a pilot or control area in which selected groups may be examined treated, and followed up by the different methods under investi-

FIG 14 NUMBER OF PERSONS PROTECTED AGAINST TREPONEMAL DISEASES IN MASS CAMPAIGNS 1948-53



under way in many areas of the world—sometimes with international assistance as in India, Chile and Yugoslavia—and it may be said that the world may now have enough penicillin to meet its immediate needs, but the demands of many countries are still below the level of medical necessity.

Reynolds, F. W., Guibe, T. & Samane, G. (1951) *J. Amer. Dis. Assoc.* 32, 263.

TABLE IV COMPARISON OF DIFFERENT TREATMENT METHODS IN SECONDARY SYPHILIS

Assessment factor	Ideal therapy	Metal chemotherapy			Combined therapy			Penicillin alone	
		Neocarphen mine and bismuth four 3 month courses of 10 injections each	Arsenoxide 1·00 mg by intravenous drip over 5 days	Amorphous aqueous penicillin 5 mega units arsenoxide 360-450 mg bismuth 6-12 injections	Penicillin in oil bee wax or with aluminium monostearate 48 mega units 10 injections	Procaline penicillin G with aluminium monostearate 48 mega units	N N dibenzylethylene diamine dipenicillin G 25 mega units		
Therapeutic efficacy *	100	91·5	90·0	91·8 *	88·4	91·3	94·0 *		
Toxicity by reactions	0	9·5	8·5	3	0·91	0·12	0·3		
mortality *	0	0·003	0·5	not reported	not reported	not reported	not reported		
Convenience of administration	100	50+ (ambulant)	50 (hospitalized)	65 (hospitalized and ambulant)	75+ (ambulant)	95 100 (ambulant)	95 100 (ambulant)		
Drug cost *	—	90/8	100	—	10/4	9/9	10 8 1/6		

* Based on data from the US Public Health Service the British Clinical Co operative Group and the University Dermatological Clinic Oslo

* Percentage of apparent cures at 24 months if the full course is given and adjusted for estimated reinfections in the case of penicillin schedules with no adjuvant therapy

* Percentage of serious by reactions

* Percentage of deaths due to treatment

* Percentage of patients completing prescribed course of therapy

Drug cost to clinics in Great Britain in shillings and pence at 1953 prices

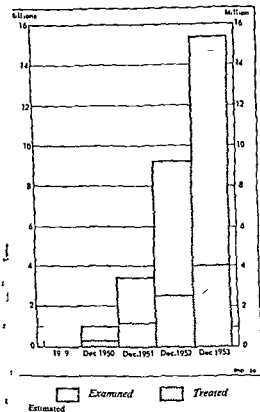
Includes seronegative and seropositive early syphilis

* 21 months follow up

mega units of penicillin of which the USA produced some 70%. Penicillin is therefore now more readily available for general use and with international assistance its beneficial effect in treating the treponematoses has been brought to millions of people (fig 14). Further production is planned or

An essential part of international aid to health administrations has thus been the supplying of penicillin for demonstration and training projects and for the first years of the mass treponematoses-control campaigns in underdeveloped areas

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under way in many areas of the world—sometimes with international assistance as in India, Chile and Yugoslavia—and it may be said that the world may now have enough penicillin to meet its immediate needs, but the demands of many countries are still below the level of medical necessity

MASS TREATMENT CAMPAIGNS

Since yaws and other endemic non venereal treponematoses are found in rural and underdeveloped areas where medical facilities are absent or minimal, their control requires a communitywide rather than an individual approach aimed at reducing the reservoir of infection as rapidly as possible to a level with which existing health facilities in the area can cope. Treponematoses-control efforts in such areas have been based on a wide application of penicillin by the entirely new public health technique of mass treatment campaigns. Since there is no immunization against the treponematoses and no intermediate host to attack, and since facilities in rural areas are scarce, this approach is the only possible one.

Stages of a Campaign

Mass treatment campaigns are developed in five main stages²² the importance of each being determined by local conditions. These stages are:

(a) general preliminary analysis of the problem; (b) development of plans of operation; (c) demonstration, training and survey phase; (d) expansion phase—the mass campaign proper—and (e) consolidation of the programme including its integration into the strengthened local health services.

An important factor in any mass treatment campaign is the initial establishment of a pilot or control area in which selected groups may be examined, treated and followed up by the different methods under investi-

Reynolds, F. W., Guthrie, T. & Samama, G. (1951) *J. Hyg.* **51**, 61.

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Assessment factor	Ideal therapy	Metal chemotherapy		Combined therapy		Penicillin alone	
		Neosarsphenamine and bismuth four 3 month courses of 10 injections each	Arsenoxide 1 200 mg by intravenous drip over 5 days	Amar bouc aqueous penicillin 5 mega units arsenoxide 350-450 mg bismuth 6 12 injections	Penicillin in oil beeswax or with aluminium monostearate 4 8 mega units bismuth 10 injections	Procalne penicillin G with aluminium monostearate 4 8 mega units	N N dibenzylethylene diamine dipenicillin G 25 mega units
Therapeutic efficacy *	100	91 5	100 0	91 8 *	98 4	91 3	94 0 *
Toxicity by reactions *	0	9 5	8 5	3	0 91	0 12	0 3
mortality *	0	0 033	0 5	not reported	not reported	not reported	not reported
Convenience of administration *	100	50+ (ambulant)	90 (hospitalized)	65 (hospitalized and ambulant)	75+ (ambulant)	95 100 (ambulant)	95 100 (ambulant)
Drug cost *	—	92/8	190	—	10/4	9/9	10/8 12/6

Based on data from the US Public Health Service the British Clinical Co operative Group and the University Dermatological Clinic Oslo
 Percentage of apparent cures at 24 months if the full course is given and adjusted for estimated reinfections in the case of penicillin schedule with no adjuvant therapy

Percentage of serious by reactions

Percentage of deaths due to treatment

* Percentage of patients completing prescribed course of therapy

* Drug cost to clinics in Great Britain in shillings and pence at 1953 prices

Includes seronegative and seropositive early syphilis

21 months follow up

cases all children at risk under 15 years of age are included and in areas of very high prevalence all community members may be considered to be at risk and treated as contacts

Much experience has been gained in these campaigns and has been detailed in various technical publications by investigators of many nationalities. It is not intended to elaborate on this experience further in the present review of WHO activities on treponematoses control. However consideration will be given later to some of the problems encountered in the expansion phase of the mass campaign to the consolidation of the initial "knock-down" effect achieved by mass application of penicillin early in control programmes and to the integration of the treponematoses-control programme into the general health services of the area.

Cost of Campaigns

The larger part of campaign costs are borne by the governments which are responsible for the projects. The costs are naturally higher in the earlier stages of the campaigns since the initial investment in equipment training of personnel and organization is considerable.

It has already been pointed out (page 60) that the drug cost per patient completing treatment is now lower with penicillin than

with metal chemotherapy. Early in the yaws campaigns, penicillin was more expensive than it is now and the total average cost per person examined and treated in mass campaigns has for this reason also decreased since the inception of the campaigns.²¹ Nevertheless the cost of penicillin represents approximately half the expenditure per person treated in mass campaigns. The remaining costs concern project personnel maintenance of transport and non-consumable equipment replacement of consumable supplies and hundreds of items relating to central and field administration.

In order to show the total costs and the cost per person examined and treated including national and international commitments these items are illustrated for three major mass campaigns in table V. The costs per person examined and per person treated have been calculated as averages from the beginning of each campaign up to and including December 1952 as has been indicated above these costs decrease as the campaigns develop. For the period ending 1952 the cost per person treated ranged from \$2.33 to \$4.00 and per person examined from \$0.39 to \$0.43. Operational research in pilot and control areas showed that a single injection of a smaller dose of penicillin could replace the technique and

Koenig S. (1953) *Bull. Wld. H. A Org.* 8: 379

TABLE V. DISTRIBUTION OF COSTS AND COST PER PERSON EXAMINED AND TREATED IN THREE WHO/UNICEF AIDED TREPONEMAL-DISEASE CONTROL CAMPAIGNS

Programme area	Contribution (US \$)					Cost per person examined (US \$)	Cost per person treated (US \$)
	Government	UNICEF	WHO	total	Government as per cent of total		
Philippines	76,122	4,894		101,005	75.4		4.01
Thailand	369,632	259,511	33,554	662,697	55.8	0.43	2.76
Indonesia	718,310	85,200	19,317	1,592,827	45.1	0.39	2.33
Total	1,164,254	1,139,595	52,851	2,356,710	49.4	0.41	2.30

From beginning of campaign to end of 1952

Information not available

gation and where full facilities are available for proper serological and other tests for the recording of results, and for epidemiological evaluation. The experience gained from such operational research in the pilot or control areas may then be applied in a more general fashion to the campaign area as a whole and the principles established there put into practice in projects elsewhere. At the outset, little experience was available on how to conduct mass campaigns, but now, as a result of work done by health administrations and WHO experience is steadily mounting, and there can be little doubt that the investments in such operational research will pay practical and scientific dividends as the wider programme develops a point which will be discussed later (see page 96).

Conduct of a Campaign

Several important lessons have been learned from the mass campaigns which have been carried out in recent years

1 It is desirable in a mass campaign to examine the entire population. If this is not done some infectious cases will be missed and the campaign may fail. Experience in Haiti has shown that the entire population cannot be examined by setting up permanent clinics and relying on the voluntary attendance of the patient. Even with suitable propaganda less than 50% of the population may be reached. If mobile clinics are also provided in strategic areas, this figure may increase to 70%, and, if a house to house survey is made the percentage will be 90 or more. It is now appreciated that a house to house technique is the best method of case finding for most mass treatment campaigns.

2 It is necessary to revisit an area after mass treatment. It is evident that follow up examinations are essential in order to deal with cases missed at the first examination

owing to default or because they were in the incubation period at the time with patients who have relapsed or with persons who have recently migrated into the area. At these resurveys it is necessary to examine the entire population again. Experience in Indonesia and elsewhere has indicated that most of the infectious cases discovered in the villages that were re-examined would have been missed if the group originally treated had been the only one studied. It is considered therefore, that, in order to obtain a lasting effect in mass campaigns against yaws the entire population should be resurveyed at intervals of approximately one year in areas of initial high prevalence of infection.

3 It is necessary to give preventive or abortive treatment to contacts. Experience in Haiti, Thailand and Yugoslavia has emphasized the importance of treating contacts who may have no overt signs of disease. In the treatment of venereal syphilis this matter is still controversial, although Alexander et al.³⁷ have demonstrated that penicillin can afford almost complete protection to persons exposed to the infection. However there is no doubt that in the endemic non-venereal treponematoses, e.g. endemic syphilis and yaws the treatment of apparently non-infected contacts with penicillin is not only an effective but also an essential epidemiological procedure. Without it control campaigns may in the long run fail not only because persons in the incubation period will later develop the disease but also because latent cases, which remain undetected when no serum tests are made may relapse.

Contacts' have been differently defined in different campaigns according to the prevalence of the disease and to environmental conditions. In some cases, a limited definition has been used, the term including only members of infected households, in other

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Alexander L. J. Schoch A. G. & Mantooth W. B. (1949)
Amer. J. Syph. 33, 429.

cases all children at risk under 15 years of age are included and in areas of very high prevalence all community members may be considered to be at risk and treated as contacts

Much experience has been gained in these campaigns and has been detailed in various technical publications by investigators of many nationalities. It is not intended to elaborate on this experience further in the present review of WHO activities on the treponematoses control. However consideration will be given later to some of the problems encountered in the expansion phase of the mass campaign to the consolidation of the initial "knock-down" effect achieved by mass application of penicillin early in control programmes and to the integration of the treponematoses control programme into the general health services of the area.

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Keeney S. (1953) *Bull. Wld Hlth Org* 8: 379

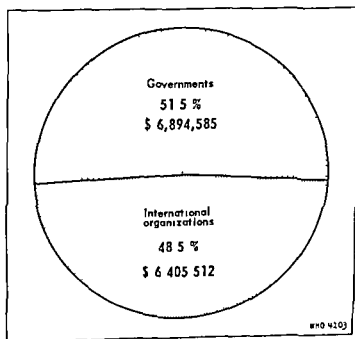
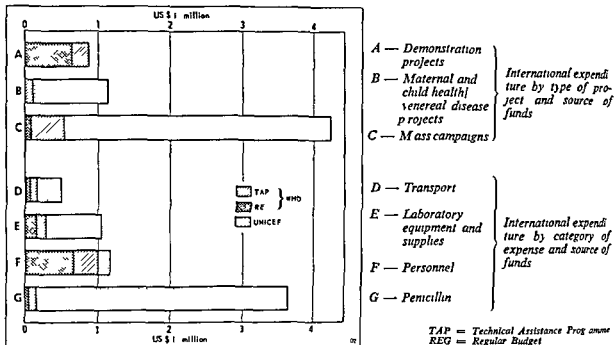
TABLE V. DISTRIBUTION OF COSTS AND COST PER PERSON EXAMINED AND TREATED IN THREE WHO/UNICEF AIDED TREPONEMAL DISEASE CONTROL CAMPAIGNS

Programme area	Contribution (US \$)					Cost per person examined (US \$)	Cost per person treated (US \$)
	Government	UNICEF	WHO	total	Government as percentage of total		
Philippines	76,122	4,884	**	101,006	75.4	**	4.01
Thailand	369,830	259.11	33,5.4	662,877	53.8	0.43	2.76
Indonesia	718,3.2	6,6,200	19,317	1,9,7,827	45.1	0.39	2.23
Total	1,164,254	1,139,545	52,851	2,3,6,710	47.4	0.41	3.30

From beginning of campaign to end of 1952

Information not available

FIG 15 NATIONAL AND INTERNATIONAL FUNDS FOR TREPONEMATOSIS CONTROL, 1949-53



National expenditure average percentage in four major campaigns used as basis for calculation of national expenditure in total programme

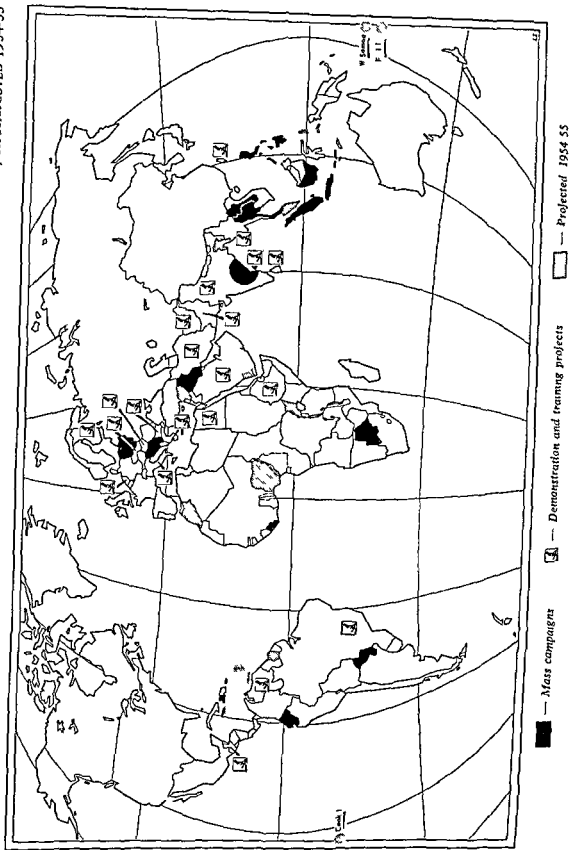
dosage initially used in several of the mass campaigns provided that the PAM met WHO specifications. A saving of 34% in the expenditure for penicillin was thus effected and operational costs were also reduced by the simplification of campaign procedures. The cumulative effect of this and the other factors already pointed out above has permitted the forecast that the cost per person examined and per person treated in such campaigns will drop to \$0.10 and \$1.00 respectively in 1954.

Information concerning the costs of campaigns other than the three listed in this

table is, thus far, less precise. However, the significant long range commitments of health administrations in treponematoses control may in general be illustrated by fig. 15 which shows national and international funds expended or allocated during the five year period 1949-53. It will be noted that the information is given by type of project and category of expense for mass campaigns for demonstration and training projects and for projects with emphasis on the control of prenatal and infantile syphilis, all of which are discussed in the following section.



FIG 16 NATIONAL TREPOENMATOSIS CONTROL PROJECTS, INTERNATIONALLY AIDED, UNDERTAKEN 1948-53, OR PROJECTED 1954-55



NATIONAL AND INTERNATIONAL ACTIVITIES IN TREPONEMATOSIS CONTROL

Since the Second World War a number of governments in various parts of the world have wished to take advantage of and to participate in international co-operation for the control of the treponematoses. This international co-operation has taken several forms.

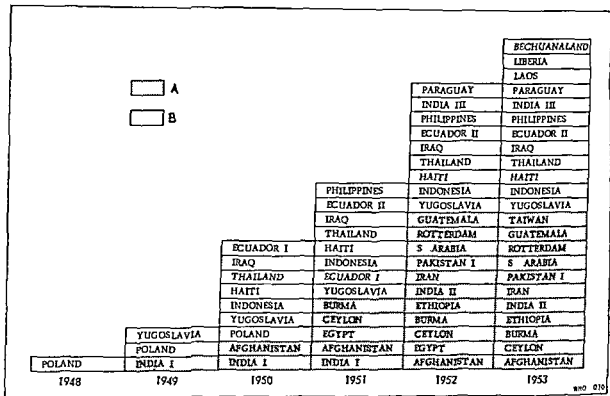
First many health administrations which have attacked the treponematoses problem with new control methods based principally on case finding and on penicillin treatment of cases and contacts have found it desirable to draw upon the experience and advice of health workers in other countries through the medium of WHO and upon the co-ordinated assistance of WHO and UNICEF in providing supplies and equipment not locally available (e.g. Indonesia Haiti Thailand). The technical aid of WHO under its regular budget or under the United Nations Technical Assistance programme is frequently given to develop mass treatment campaigns described previously as a new public health technique in the control of the treponematoses.

A second type of activity has been the establishment or strengthening of demonstration and training projects. This has in the past proved a useful form of international health aid and some countries (e.g. Ceylon Egypt India) have developed projects based on this approach. A well-equipped venereal disease centre is established as a model for others to be set up later in different areas by local health administrations and to serve as a training base for medical and auxiliary personnel. Such a centre or clinic is usually directed and operated by national staff assisted by an international team of advisers which may include a venereologist a serologist a public health nurse and sometimes a health education specialist. In addition to diagnosis and treatment the activities comprise epidemiological measures including case finding through home visiting. Serological services not only are used for diagnosis and follow up of cases treated in the centres but also are applied to special wider samples in different population groups and in other parts of the country as the project develops. The demonstration and training centre is usually in an urban area and is in a way supplementary to the mass treatment campaign justified in rural areas in which facilities are mobile and activities simplified because of the prevalence of the treponematoses and the more primitive conditions of health and environment in which it is carried out.

A third approach has been adopted in some countries with special problems of syphilis control in these as part of the general health programme advantage has been taken of maternal and child health services in order to find cases of syphilis and to give treatment to children adolescents pregnant women and nursing mothers. This approach was used in Finland and in some of the eastern European countries immediately after the Second World War. In other countries such as Afghanistan Burma Pakistan and Taiwan venereal-disease control has been further emphasized in the maternal and child health programme by having a special section on venereal-disease control within the framework of the activities of the WHO advisory team.

The above aspects of treponematoses control call for special national efforts and long term commitments under the communicable disease control programmes of the countries concerned. WHO's role is to meet the governments' requests for technical aid through its machinery of regional offices, advisers, and consultants assigned to specific projects. In the five years from 1948 to 1953, WHO has assisted health administrations in many countries and in all regions in treponematoses control. Fig 17 illustrates the expansion of the programme on a geographical basis for mass campaigns and for demonstration and training projects. The expanding nature of internationally aided programmes in terms of the increasing number of persons protected against the treponemal diseases in mass campaigns during the past several years has already been illustrated in fig 14 (see page 61).

FIG 17 TREPONEMATOSIS CONTROL PROJECTS ASSISTED BY WHO AND UNICEF 1948-53



A — Demonstration and training projects B — Mass campaigns
 Roman numerals indicate more than one project in the same country

In addition to aiding national efforts such as these, WHO has a more directly international function in co-ordinating and stimulating treponematoses control on an inter-country and inter-regional basis. As an international co-ordinator of health activities, WHO also grants fellowships, sponsors training courses, organizes seminars, symposia, and international conferences, encourages the exchange of scientific information, provides technical guidance through its expert committees, furthers the standardization of serological reagents and methods, co-ordinates special studies on particular treponematoses problems, and undertakes operational research aiming at the simplification of health techniques.

Finally, through collaboration with international non-governmental organizations interested in venereal disease and treponematoses control—such as the International Derma-

tological Congresses and the International Union against the Venereal Diseases—the programme of national health administrations and WHO may obtain support from voluntary organizations and professional societies in many countries. WHO maintains official relationships with the International Union against the Venereal Diseases and various joint projects have been undertaken such as the publication of information on national venereal-disease legislation throughout the world.

These various phases of the Organization's work will be considered in the articles which follow though it must be emphasized that only a general review can be given here and that this account does not claim to be a complete catalogue of national and international treponematoses-control activities. Further information concerning national projects and WHO's programme in treponematoses control may be found in the medical literature including other WHO publications such as the *Bulletin of the World Health Organization*, the Monograph Series, the Technical Report Series and the *Official Records of the World Health Organization* including the Annual Reports of the Director General.

WHO OBJECTIVES IN TREPONEMATOSIS CONTROL

1. To stimulate the development of intensive and comprehensive health projects so that the treponematoses can be eliminated as public health problems and by such projects to contribute to the strengthening of local and national health services.
2. To contribute to the establishment in Member States of a practical degree of control of venereal syphilis (and other venereal infections) and to the prevention of their spread between countries and within special population groups.
3. To stimulate teaching and training activities to promote studies and exchange of scientific information and to foster simplification and standardization of health techniques through operational and laboratory research in an effort to co-ordinate national and international treponematoses-control activities.

THE CONTROL OF VENEREAL SYPHILIS IN VARIOUS COUNTRIES

Eastern Europe

Aid from UNRRA was requested by several health administrations in eastern Europe after the Second World War. Some of these requests were for assistance in the control of venereal syphilis which had become a serious health problem in many areas as a result of the war. With the cessation of UNRRA activities this type of aid became the responsibility of WHO and UNICEF, which provided technical advisers and consultants and certain supplies and equipment to the Governments of Bulgaria, Czechoslovakia, Hungary, and Poland for syphilis control. In some of these countries emphasis was on the control of prenatal and infantile syphilis but in Czechoslovakia and Poland the control measures were of wider scope.

One of the first treponematoses control projects in which international assistance was sought was in Poland. The Polish health administration undertook a syphilis control campaign in which penicillin was used for the first time on a mass scale.

In 1947, mobile units were established for case finding by mass serological screening examinations and for the health education of the public. The entire population of the areas concerned was examined, and positive reactors were directed to the nearest health centre for confirmation of the diagnosis. From the start of the campaign until the end of August 1948, 1,540 000 persons were examined by the Chediak test which was found the most practical for mass screening. Of the 1,200 000 persons examined during 1948 alone 21,772 had positive or doubtful serological findings, of these 11 066 were confirmed by further examination.

Patients with early syphilis received 3-4.2 mega units of penicillin in oil beeswax (POB)—the repository preparation available at that time. In the early stages of the campaign this treatment was combined with a course of arsenoxide and bismuth. Pregnant women received 6 mega units of POB without adjuvant therapy, and children with congenital syphilis also received penicillin alone.

Four hundred and thirty five physicians, 331 nurses, and 255 public health nurses and social workers were recruited, training courses were open to all physicians in the country.

The Polish mass campaign was from the start integrated with the health services which in effect were responsible for the organization of new treatment facilities; it also made use of the existing venereal disease clinics, local health centres, and maternal and child health units.

Unfortunately, Poland has since 1950 ceased to be an active member of WHO and precise information for evaluating the ultimate success of the campaign has therefore not become available to the Organization. The same is true of Bulgaria, Czechoslovakia and Hungary, from which sufficient data have not been obtained to appraise the actual extent of the work and the results achieved.

Finland, Greece, Italy

The programmes in Finland, Greece, and Italy were designed to assist the Governments of these countries in the control of syphilis among pregnant women, nursing mothers and infants. Equipment and supplies were

provided by UNICEF and consultant services medical literature and fellowships by WHO

In Finland control of prenatal and infantile syphilis formed part of a nationwide venereal disease-control campaign which although well organized and operated was restricted owing to economic and technical difficulties. International assistance enabled the Government to expand its efforts and to introduce modern methods of treatment and control on a wider scale. The proportion of pregnant women serologically examined for syphilis increased from 41% in 1946 to 92% in 1951 and the total number of blood specimens examined by the serological laboratories in the country increased from 288 885 in 1949 to 323 135 in 1950 an increase of about 12%. The great majority of syphilitic mothers were hospitalized before delivery for complete physical and serological examinations postnatal examinations including X-ray studies of mothers and children were carried out at stated intervals. Although the specific death rates attributed to syphilis have shown little change a significant reduction took place in infant mortality due to syphilis in the period 1948-51. Despite the considerable decrease in the number of discovered cases of primary and secondary syphilis in the country as a whole venereal-disease-control activities have not been relaxed it would appear that so long as these efforts continue it is not likely that venereal disease will again be a public health problem of great magnitude. This shows how appropriate aid to an already existing and effective venereal disease-control programme can sustain and expand public health activities.

In Greece and Italy no nationwide venereal-disease campaigns were envisaged. After visits by WHO consultants it was agreed that limited demonstrations of case finding and of treating prenatal and infantile syphilis with penicillin should be undertaken.

In Italy demonstration centres were established in Rome, Naples, Palermo, Messina, Catania and Agrigento. In the centre at Naples work began in 1948 but activities did not start in the other centres until the early autumn of 1949. By the end of 1950 15 613 serological tests in prenatal syphilis had been carried out and 1 074 in cases of infantile syphilis. 2 729 patients had been treated with penicillin, 2 181 of whom were pregnant women.

In 1950 the Italian Government distributed penicillin to all venereal-disease-control dispensaries in major towns in Italy.

In Greece the Ministry of Health requested WHO/UNICEF assistance in 1949 to control syphilis among pregnant women in Athens, Piraeus and Salonica. During 1950 and 1951 about 1 510 women and a similar number of congenitally syphilitic children were treated with penicillin. In 1950 a demonstration project for treatment of early syphilis in adults was established with WHO assistance in one of the major clinics in Athens.

India

A WHO venereal-disease demonstration team began work in the Himachal Pradesh in 1949 with the aim of developing venereal disease control on modern lines at reasonable cost and of giving training in diagnosis, treatment and control to local staff. Laboratory centres for bacteriological and serological procedures in the diagnosis of venereal disease were established and stress was laid on the standardization of serodiagnostic techniques.

Treatment schedules were recommended suited to local conditions and the importance of controlling early infection and of preventing congenital syphilis was emphasized. Due attention was also paid to the desirability of special research work, the compilation of statistical data and the value

of epidemiological investigation and case finding

Training was given in three month courses, and the most satisfactory teaching method was found in seminars technical demonstrations were carried out in the clinic the laboratory, and the field

During the first year serological surveys were made in many areas in different parts of India. Wide variations in seropositivity of from 5% to over 50% of the population groups examined were revealed

A limited mass campaign was undertaken in the Ghund area where the prevalence of syphilis was found to be extremely high and where environmental conditions were such that the project could be subjected to certain controls. Altogether about 1 556 persons were tested by the Meinicke and VDRL slide test techniques and 590 persons (38%) were treated, in 1949, with 300 000 units of PAM each. A sample re examination of 453 persons was made six months later, and of 177 after a year

Experience in this small pilot project indicated that large groups of people could be assembled for examination and treatment under extremely difficult field conditions and that, if simple slide tests were used laboratory examinations also could be carried out in the field and the results of the serum tests obtained on the same day as the specimens were taken. The immediate results of treatment indicated a satisfactory initial decrease in the reservoir of infection and the number of new cases fell significantly¹. At the follow up examinations a considerable lowering in the serological titre was also noticed and the re treatment rate was about 20%. A resurvey, for epidemiological study is planned for 1955

A demonstration project in progress in southern India is concerned with the strength

ening of the facilities for teaching and research at the Venereal Disease Department of the Madras Medical College. The clinic there is probably one of the largest in the world total attendance in 1949 amounted to 69,939 men and 20,320 women and children, and in 1950 to 66 082 men and 24,131 women and children. In both years the number of new cases exceeded 15 000

WHO has supplied a consultant serologist and a public health nurse in addition to laboratory and teaching equipment and a medical social worker has been provided by the United Nations. The Madras Government has for its part, considerably increased its staff and provided equipment and supplies for the further strengthening of the medical centre

A special laboratory established in the Madras General Hospital participated in the first all Indian serological evaluation programme, sponsored by the Indian Council for Medical Research. Six national laboratories in different parts of India participated and the Madras laboratory acted as reference centre. Inter state evaluation of the tests performed by field laboratories was also organized

Afghanistan

A venereal disease clinic and laboratory working in co operation with maternal and child health services, was established in 1950 at Kabul. WHO has provided medical advisers and nursing consultants and UNICEF has provided important supplies

Between March 1952 and July 1953, seven medical officers and nine nurses were trained in the venereal disease clinic, eight medical officers, 24 laboratory technicians and assistants and four nurses were trained in the laboratory. Lecture courses have been given to the local midwifery school to student nurses at the maternity hospital and to

medical personnel at the Kabul military establishment

Numerous serological surveys have been undertaken and treatment has been given to patients with positive reactions. Home visiting and epidemiological case finding have been encouraged. A total of 5 153 persons have been tested and the seropositivity has varied from 31% among prisoners at Herat to 0.6% among schoolchildren in different areas.

The laboratory has gradually increased its activities from serological testing for syphilis only to include various laboratory examinations of a general character. In fact it is currently functioning as an expanded public health laboratory for maternal and child health and other purposes.

Ecuador

In Ecuador a small scale demonstration for controlling syphilis by mass PAM treatment has been in operation in the Portoviejo and Manta regions since 1950. Each of these regions has a population of 5 000-6 000 persons between the ages of 15 and 50 years.

All persons in this age group whether or not they were infected with syphilis have been given two injections of 1.2 mega units of PAM each at five days interval and a serological test has been made at the time of the first injection, the patient being informed of the results at the second injection. Treatment has been given in the central clinic at community centres and on a mobile basis by a house-to-house canvass. By this means a mass treatment campaign and a serological survey have been conducted simultaneously.

By September 1952 VDRL and Kahn serological tests had been done on 4 762 persons in Portoviejo. 404 (8.5%) were positive to both tests. Up to March 1953 some 7 223 people had been serologically tested

in the campaign in Manta. A third campaign was organized in Bahia in May 1953.

Egypt

With the help of WHO a demonstration centre was established in 1950 at Tanta between Cairo and Alexandria with the objects of furthering training of medical and auxiliary personnel of standardizing diagnostic and treatment procedures of stimulating interest in the promotion of health education of encouraging case finding epidemiological and other public health methods of carrying out operational research and finally of studying the importance of the venereal-disease problem in the country as a whole. It was found that the incidence of syphilis was not as high as had originally been estimated by the health administration. The seropositivity among different population groups totalling 29 704 persons varied between 17.3% and 0.2%.

The demonstration centre was later transferred to Cairo where the international staff (a venereologist, laboratory physician, public health nurse and a health educator) was able to enter into more direct contact with university clinics and to create interest in health education. The demonstration team introduced and gained wide acceptance of the use of PAM in syphilotherapy. In national clinics throughout the country newer antigens and modern serological methods were also introduced. Training courses were organized by the Ministry of Health for doctors, nurses and serologists. Mobile venereal disease control field units were established.

The WHO team left Egypt at the end of 1952. However venereal-disease control is going forward and is being extended. Thus a mass serological examination of the population of the Siwa oasis in western Egypt was recently made. Patients and contacts were treated, and the epidemiological and socio

logical aspects were studied. The population of this oasis is being re examined after six to eight months. This is an example of the kind of continuity which WHO seeks to foster when its direct assistance has ceased.

Burma

A model venereal disease clinic and laboratory has been in operation in Rangoon since 1951 with WHO and UNICEF assistance. The clinic works in co operation with five local venereal disease centres, and four venereal disease centres in other areas of the country have been established as part of the project. There has also been close co operation with maternal and child welfare centres throughout the country and with a special skin clinic for the treatment of leprosy.

Between September 1951 and December 1953, a total of 34,571 cases of syphilis were found among 118 446 patients seen at the main clinic and the outlying clinics including those in Mandalay, Moulmein, and Pegu. A number of special serological surveys have been undertaken, in which 39 378 persons were tested. The seropositivity varied from 25.4% among Rangoon port workers to 2.4% among Rangoon students.

At the Rangoon centre medical officers, nurses, inspectors, laboratory technicians and social workers have been trained by the international staff, comprising a venereologist, a laboratory expert, and a public health nurse. In addition lectures and clinical demonstrations have been given to medical students, student nurses, health visitors, students in public health nursing, midwives and other medical or para medical personnel.

Ceylon

In 1951 a venereal disease control project was begun by the health administration of Ceylon with WHO providing the services

of a venereologist and a public health nurse. It has been estimated that venereal diseases affect more than 10% of the total island population.

A model clinic was established in Colombo to start the control of venereal diseases in the city. Collaboration is maintained with other medical and public health activities such as maternal and child welfare clinics and blood banks. Three local subsidiary clinics and four outstation clinics run by medical officers trained at the main clinic, have been set up in different parts of Ceylon. Between March 1952 and November 1953, 4 013 cases of syphilis were diagnosed among 22 479 patients seen at the central and other clinics. Special serological surveys have been conducted on a total of 46,853 persons who showed a seropositivity varying from 11.9% among workers in private tanneries to 0.5% among schoolboys.

Since June 1952, a number of medical officers have been trained at the clinic and courses of lectures have been given to doctors, postgraduate and undergraduate medical students, sanitary inspectors, nurses, rural leaders and teachers from the training school.

Ethiopia

On the basis of recommendations resulting from a WHO survey,³ a central venereal disease clinic and laboratory was established at Addis Ababa in 1952 with the dual function of training national staff and of carrying out mass serological tests and penicillin treatment. WHO has furnished a venereologist, a serologist and a public health nurse. Technicians and auxiliary workers have been trained and will be sent out into the field in secondary teams to carry out mass penicillin treatment under

Chel arajah, T. (1947) *Ceylon Hith News* 13. 1.
Guthe, T. (1949) *Bull. Wld Hlth Org.* 2, 83.

central supervision. The WHO team also helps in work against leprosy.

Special epidemiological studies in certain population groups are being carried out in Addis Ababa where the laboratory is performing serological tests on selected groups. Serological surveys of 7 080 persons have been made and variations in seropositivity of from 82% among prostitutes in Addis Ababa to 2.3% among schoolchildren have been found.

Paraguay

The objective of a campaign in Paraguay which began in 1952 on a limited scale was to determine the prevalence of syphilis in the urban and rural area of Asunción Villarrica where a seropositivity of about 20% had previously been found and to reduce the incidence of syphilis by modern methods of venereal-disease control. By November 1953 13 200 persons had been examined and 1 822 (14%) had been treated with single doses of 1.2 mega units of PAM. This pilot project will serve as the basis for a nationwide attempt to control venereal diseases.

Iran

In Iran WHO is assisting the Government in the establishment of a modern venereal disease-control and laboratory centre at Teheran and in the expansion and improvement of facilities for venereal-disease control in the country as a whole.

A three months training course for medical and auxiliary personnel from different provinces started in September 1953 and was attended by 14 doctors, 7 laboratory technicians and 27 physician aids. The staff trained at the centre will assist the Government in the initiation of venereal-disease control in other cities and in rural areas of the country.

As in other projects of this nature advice is being given by a WHO venereologist, serologist and public health nurse.

Pakistan

In West Pakistan efforts are being made to extend the existing venereal disease-control facilities in and around Karachi making new methods of treatment available to the local population of that city and to national and foreign merchant seamen. A fine modern clinic centre has recently been opened which will also be used as a training centre for national technical and professional staff. A WHO venereologist, serologist and public health nurse have been attached to this centre.

Among 9 484 patients seen at the Karachi centre between May and December 1953 there were 809 cases of syphilis (8.5%).

As in all such operations the project is the responsibility of the national Government which will establish smaller venereal disease-control units in other parts of the country. These centres will be run by persons trained at Karachi. It is expected that these activities will later be expanded and a venereal-disease centre is planned for Chittagong, East Pakistan in 1955.

Saudi Arabia

A venereal-disease demonstration has been in operation at Mecca since 1952, with the assistance of a WHO venereologist and a serologist. Serological surveys conducted on 10 273 persons have shown a variation in seropositivity of from 33.4% in the armed forces to 8% among schoolchildren.

The object of the work has been to set up a clinic and a laboratory from which an investigation into the epidemiology of syphilis and other venereal infections in different parts of the country may be conducted and where technical staff may be trained. It has been found that syphilis in certain areas of Saudi Arabia is of the endemic type similar to that found in Bosnia, Yugoslavia.

Taiwan

A demonstration project was initiated in Taiwan in 1953, with WHO and UNICEF assistance. This project seeks to provide venereal disease control services for all pregnant women and for children and ultimately, to establish an islandwide venereal-disease control programme, including a special port demonstration.

Surveys will be carried out in order to

assess the extent of the problem in Taiwan. For example, a serological survey of 1,660 teachers is at present in progress. The existing laboratory services will be strengthened and laboratory techniques standardized. Local staff is being trained by a team of national and international advisers and health education is being emphasized. The main demonstration centre is at the provincial hospital in Taipei.

ENDEMIC SYPHILIS IN BOSNIA

There is historical evidence that syphilis was introduced into Bosnia by the Ottoman armies in the 18th century. By the end of the 19th century the disease was already wide spread both in Bosnia and in Herzegovina. Owing to unhygienic living conditions, low educational and economic standards, and certain social customs such as the common use of drinking vessels, the disease became endemic.

Investigations undertaken in Bosnia during the years 1905-11 indicated a prevalence of 8.3%, and a study carried out between 1926 and 1933 gave a figure of 11.8%. Before 1948, attempts to control endemic syphilis with neoarsphenamines were unsuccessful. In that year, the Yugoslav health administration initiated a nationwide syphilis control programme, paying special attention to endemic syphilis in Bosnia, and requested the assistance of WHO and UNICEF. The approach to the problem was governed by the realization that if the campaign against endemic syphilis was to succeed fully, it must accompany measures to improve the standards of education and health in general.

In this campaign a systematic serological screening was undertaken in which approximately 435,000 persons or 95% of the total census population of the endemic areas

were examined. In all, more than a million examinations and re-examinations were made. By the end of 1952, 35,238 persons, 8.1% of the examined population, had been treated with penicillin.

The campaign directed from a central headquarters in Sarajevo, was carried out by three field groups, each composed of several teams in co-operation with the local health officers of the districts being covered. During the early days of the campaign, infectious cases were treated with PAM, adults receiving a total of 3,642 mega units, in six or seven injections given daily or every other day. Later the total dosage was given in a single injection, and no difference was observed in the results. Finally, single injections of 1.8 mega units were used in a number of areas.

Although at the beginning it was felt that the greatest danger to the success of the campaign was the risk of relapses, it soon became apparent that this was negligible in comparison to the reinfections that occurred and the reactivation of endemic foci from cases that were missed, absent or in the incubation period at the time of the first survey. The need for resurveys in which the entire population was again examined became evident. The best results were obtained when

TABLE VI ENDEMIC SYPHILIS EARLY INFECTIOUS LESIONS AND SEROPOSITIVITY OBSERVED IN FOUR SURVEYS IN MNO SAPNA BOSNIA 1949-52

Area	Mean population	Early infectious lesions								Sero positivity							
		number of cases				of mean population				number of cases				% of mean population			
		survey No				survey No				survey No				survey No			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Kraljevići	418	30	1	1	0	7.2	0.2	0	0	130	64	8	3	31.1	15.3	1.9	0.7
2. Ramići	33	23	7	5	0	9.3	2.2	1.6	0	103	57	17	5	32.9	18	5.4	1.6
3. Mirda	36	24	4	3	0	6.7	1.1	0.8	0	212	116	97	8	57.6	32.6	7.2	2.2
4. Goduli	354	16	1	2	0	4.5	0.3	0.6	0	70	46	14	3	19.8	13.0	4.0	0.8
5. Sapna	495	10	0	7	0	2.0	0	1.4	0	65	41	4	10	17.2	8.3	4.8	0
6. Ađevići	273	7	0	0	0	2.6	0	0	0	78	26	5	3	28.6	9.5	1.8	1.1
7. Mahmudović	225	7	0	0	0	3.1	0	0	0	44	19	1	1	19.5	8.0	0.4	0.4
8. Kovačevići	307	7	4	4	0	2.3	1.3	1.3	0	54	31	7	2	17.6	10.1	2.3	0.7
9. Mirković	416	5	0	0	0	1.2	0	0	0	97	57	15	12	23.3	13.7	3.6	2.9
10. Jusići	195	1	0	0	0	0.5	0	0	0	23	12	3	0	11.8	6.2	1.5	0
Total	3,352	136	17	22	0	4.1	0.5	0.7	0	896	468	191	47	26.7	14.0	5.7	1.4

MNO is a small administrative unit. The total area of MNO Sapna is 125 square kilometres (48 square miles) 94.5% of the mean total population was examined.

The four surveys were carried out on the following dates: I 2 October 1949; II 4 April 1950; III 30 June 1951; IV 10 January 1952. During each survey the cases to be treated were treated. In survey III household contacts were also tested.

the entire population was examined at the first survey and when treatment was given to all household and family contacts. The abortive treatment of such contacts consisted of single injections of 1.2 mega units of PAM.

The gradual decline in the numbers of early infectious cases and in seropositivity is well illustrated in table VI and fig. 18.

The valuable experience gained in this programme has been described by its director Dr E. I. Grün⁴ who points out

"The reservoir as a whole has been brought under control, and the attitude of the people to the problem has been altered: this is due partly to some general improvement in the social and economic conditions, partly to the work of the field teams and to the general progress of the campaign and partly to the

fact that new cases of endemic syphilis are now detected more rapidly and can be more quickly dealt with.

"The epidemiological situation cannot conceivably return to its original form after one or two follow-up examinations have been made, but constant supervision of previously endemic areas is necessary as part of the long term programme. In Bosnia such supervision and health control are provided by one or more health workers remaining in the field between control examinations and after the field campaign proper has come to an end. Being selected from the field teams they are familiar with endemic syphilis as a rural health problem in all its aspects. The health workers co-operate with the local health centres which assume the responsibility for keeping the disease under control through their normal machinery against communicable diseases in the consolidation phase of the long term programme.

"The present programme is serving as a bridgehead to the development of general public health services and to the expansion of the machinery against communicable diseases."

Grün, E. I. (1953) Epidemiology and control of endemic syphilis, report on a mass survey among In Bosnia, Czechoslovakia (Health Organization Monograph Series No. 11), pp. 75-79.

These are satisfactory conclusions and they indicate

(a) that a treponematoses can be brought under control by means of mass treatment with penicillin if suitably applied

(b) that a programme to combat endemic syphilis itself stimulates social advancement, which in turn renders the environment unsympathetic to the return of the disease, and

(c) that a treponematoses project can serve as a bridgehead for future public health activity

It is believed that the campaign in Bosnia not only is to the considerable credit of the local health administration, but also has been one in which most useful experience has been gained for application in the management of other mass campaigns of which it has been in its way, the prototype

BEJEL AND DICHUCHWA

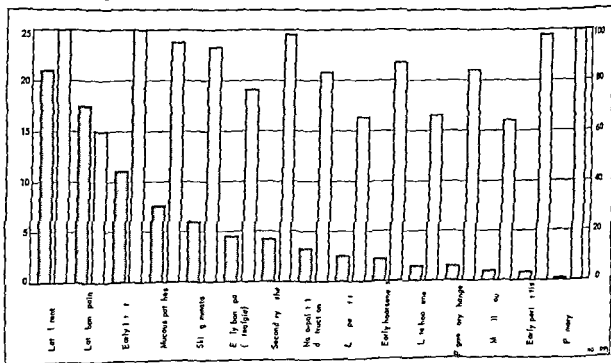
Bejel in Iraq

In Iraq, treponematoses control activities are centred on bejel the syphilis like disease described by Hudson⁵ in 1928. A joint WHO/UNICEF aided demonstration in bejel control was initiated in 1950. An area in the

Ramadi region north of Baghdad, was first selected for study later, surveys were undertaken in the Mosul region in the north, the Amara region in the south and subsequently, in other areas. It became apparent that the disease was not so widespread as had first been feared and that it occurred most frequently in the river bed areas and particu-

Hudson E H (1928) *Nor med Bull (Wash)* 26 817

FIG 19 PERCENTAGE DISTRIBUTION OF CLINICAL SYMPTOMS AND SEROPOSITIVITY IN BEJEL



Cross section of 3 507 cases of untreated bejel

□ % of total patients with particular symptom
(scale on left clinical symptoms)

■ % seroreactors
(scale on right seroreactors)

larly among the marsh Arabs of Amara where the difficulties of transport were greatest and the people therefore most isolated

The areas where bejel is prevalent have been the site of a mass campaign of treatment with penicillin. By the end of December 1953 more than 134 000 persons had been examined and more than 78 000 cases and contacts treated. Progress in this campaign has been less rapid than in similar WHO/UNICEF assisted projects partly because the population is widely scattered and because the

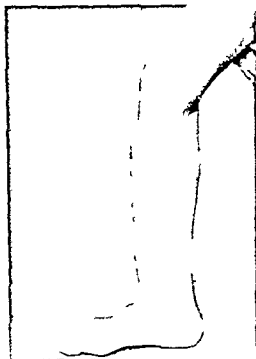
FIG 20 EARLY BEJEL



General papular eruption in woman three weeks pregnant. This patient was treated with 1.2 mega units of PAM and at term delivered a healthy sero-negative child.

(G Caonka, London)

FIG 21 LATE BEJEL



In late stages of the treponematoses there may be painful osteoperiostitis as illustrated above in a case of bejel

(G Caonka, Lo don)

facilities for communication and transportation in the areas of high prevalence are limited

As has been indicated on page 50 there is great similarity in the epidemiology and in clinical manifestations of bejel and endemic syphilis. The late lesions are comparable to the gummata osteoperiostitis and nasal laryngeal and palatal lesions of benign tertiary syphilis. A cross section of 3 507 cases of untreated bejel confirms this view⁶ and is illustrated in fig 19

Bejel lesions observed in Iraq are shown in fig 20 and 21. Other examples including one of extreme mutilation have been described by Jones⁷

Caonka, G (1953) *Brit J Vener Dis* 29 55

Jones, L. G. G (1953) *Brit J Vener Dis* 29 104



Even in far advanced late cases of bejel the infection may be arrested by a single injection of long-acting penicillin as shown in the above photographs. Left before treatment right three weeks after one injection of 24 mega units of PAM

(L. G. G. Jones London)

Dichuchwa in Bechuanaland

It has already been mentioned that dichuchwa a treponematoses similar to or identical with endemic syphilis and bejel is encountered in some parts of Africa. A joint WHO/UNICEF programme to control this infection was initiated in Bechuanaland in November 1953.

Field operations during the first year of the project are being limited to a study of the epidemiological, clinical, and serological aspects of the infection including the response to treatment of cases and contacts. The Bakwena Reserve, which is occupied by the 40 000 members of the Bakwena tribe has

been selected for the preliminary investigations control and follow up measures are being undertaken on a family basis. Treatment is being given to all active cases of treponemal diseases to all latent cases (as determined by anamnesis), and to the contacts of infectious cases. Contacts have been defined as all adults in the same house and all children under the age of 16 years in the same kraal as any infectious case.

In November and December 1953, 5 000 persons were examined. Information obtained thus far will form the basis for a mass treatment campaign which will begin with UNICEF assistance towards the end of 1954.

MASS CAMPAIGNS AGAINST YAWS

Haiti

Of 3.5 million people living in the Republic of Haiti approximately five out of six live in underdeveloped rural areas where yaws has for some time been rampant. Although it is difficult to estimate the prevalence of the disease in the past it is thought that approximately 1.5 million people had yaws a few years ago.

In 1941 on the request of the Government of Haiti to the Pan American Sanitary Bureau a yaws survey was made and plans put forward for the control of the disease. Early in 1942 a limited programme based on treatment at stationary clinics was started jointly by the Government of Haiti and the Institute of Inter American Affairs. At first metal chemotherapy was used but later penicillin was substituted after a demonstration of the excellent effects of penicillin in oil and beeswax.⁸

In 1948 the United Nations Mission of Technical Assistance to the Republic of Haiti recommended that an organized nationwide mass campaign with penicillin be undertaken. This proposal was considered by the WHO Expert Committee on Venereal Infections in 1949⁹ which recommended that in the Republic of Haiti and the Dominican Republic an epidemiological experiment be carried out with simple mass techniques and using procaine penicillin in oil with aluminium monostearate (PAM).

The present campaign began in July 1950 with a team of WHO technical advisers and UNICEF supplies and has been in continuous operation since that time. The simplest methods have been used throughout. As

medical staff is limited mass treatment has been carried out by rapidly trained auxiliary personnel and local inspectors who are also qualified chauffeur mechanics have performed the bulk of the work. These "injectors" have given treatment to everybody regardless of age or clinical or anamnestic evidence of yaws. Satisfactory results have been obtained by giving 600 000 units of PAM to yaws cases; those without clinical manifestations or history of the disease have received only 300 000 units and children and infants have been given proportionately smaller doses.

By the autumn of 1951 666 738 persons had been treated in clinics. When the first census figures became available however it was found that an insufficient percentage of the population was being reached and a change was made to a house-to-house method of treatment in which each person seen was given an injection of penicillin in the same doses as before. With this method 1 700 240 persons (about 97% of the population of the new areas covered) were treated between October 1951 and September 1953. Sample surveys carried out in these areas eight months after treatment showed that the initial "knock-down" had been satisfactory; very few cases of infectious yaws were found. On the other hand in the areas that relied on the fixed clinic system and where substandard penicillin had been used in some cases isolated foci of infection persisted and some of them had already begun to expand. It has therefore become necessary to revisit each house in these areas treating all persons regardless of presence or absence of the disease with a satisfactory penicillin.

There is a substantial focus of venereal syphilis in the urban area in and around

Dunnette J. H., Sheldon, A. J., Rein, C. R. & Sternberg, T. H. (1947) *Amer. J. Trop. Med.* 27: 633.

Wkly. Hlth. O. g. t. An. R. p. Ser. 1950 13: 16.

Port au Prince and measures against it, before the Haiti programme is completed, are being considered

Haiti is only one part of an island shared by the Dominican Republic. It is clear, therefore, that the eradication of yaws will be difficult unless control efforts are undertaken in the border areas of the Dominican Republic as well and steps to this end are under consideration

Indonesia

The population of Indonesia is estimated at 75 million, the vast majority living in rural areas. It has been stated that there are about 10 million cases of yaws in the country.

Active yaws work was carried out with arsenicals in Indonesia before the Second World War, but during the war control measures were discontinued, and a sharp rise in the incidence of the disease took place. Plans for the control of yaws, with the help of WHO and UNICEF, were drawn up by the Indonesian Government and WHO consultants and the work began in May 1950. Starting with two areas in the residences of Jakarta and Jogjakarta, the operations have since been extended to west Java, Bali and Flores, north Sumatra and South and West Kalimantan (Borneo).

The campaign is based on teams of six or eight trained nurses working under the supervision of full time and part time medical officers. Owing to the shortage of personnel a scheme has been introduced by which 200 assistant nurses working in dispensaries under the supervision of the trained nurses are being instructed in the diagnosis and treatment of yaws. Early in 1953 there were 24 regular mass treatment teams and 35 simplified teams in the field. These teams examine the entire populations of villages and all patients with active yaws are asked

to report to a site where the diagnosis is checked and treatment administered.

The campaign as a whole is run from headquarters at Jogjakarta from which several important pilot studies have been carried out to determine the efficacy of various treatment schedules and methods of approach to the communities. A study is also being made of the efficacy of diamine penicillin under tropical conditions.

At the beginning of the campaign, adults were treated with two injections of 12 mega units of PAM each given at intervals of from four to seven days, smaller doses were given to children. Recently, single injections of 18 mega units have been given. It is now accepted in principle that the treatment of apparently non-infected house and school contacts with half this dosage is necessary. To date, however, comparatively few contacts have been treated.

In all a total of 6,745,515 persons had been examined and 1,079,224 treated up to the end of 1953. No fewer than 73,205 persons were treated for the first time during resurveys indicating the necessity of re-examining the total population on these occasions. The populations covered have frequently reached the desired level of 90%.

Thailand

Of the 18.3 million people in Thailand, it is estimated that approximately 60% or about 11 million, live in areas where yaws is found. From surveys of these areas it is estimated that there may be about 1,430,000 cases of yaws. The distribution of the disease is patchy but here as elsewhere it is associated with remoteness, filth and low standards of personal hygiene. Previously arsenicals were administered at a few stationary rural clinics but, as in other parts of the world, they had little or no effect in controlling the disease.

A WHO/UNICEF assisted campaign began in April 1950. The campaign is being carried out by mobile teams composed of one medical officer and usually four auxiliary workers. 17 regular teams and three follow up teams are at present at work. A WHO team of advisers is assisting the national health administration.

Until the end of October 1952, the treatment consisted of two injections of 1.2 mega units of PAM each. Since that time single injections of 1.218 mega units of PAM have been given. The Government has supplied one third of the penicillin and UNICEF two-thirds.

Where the prevalence of yaws is 15% or over or where there is a high proportion of infectious cases, the treatment of contacts has been extended to include not only household contacts but also all contacts in the same class at school as children found to have infectious yaws. Resurveys are being undertaken in the treated areas.

In the three and a half years up to November 1953 a total of 2,581,879 persons had been examined (first examination). 317,892 had been treated for the first time and 6,391 re-treated. About 34,093 of the treated cases were discovered at resurvey. It was planned that about 750,000 people were to be examined in the second half of 1953 and 1,750,000 in 1954. At the present rate of progress the work will continue for the next three to five years. Approximately 54% of the cost is borne by the Government and 46% by UNICEF.

Philippines

The Philippine archipelago consists of 7,021 islands with a total population of about 20 million of whom three quarters live in rural areas. Yaws is reported to be endemic in 39 of the 51 provinces. In 30 of these the prevalence is reported to be less than 1% but in the remaining nine the average

prevalence is 3.6% and reaches 30% in certain areas. The disease is most common on the smaller islands along the sea coast along rivers and in the swampy regions of the larger islands.

The Philippine Government assisted by WHO and UNICEF began a yaws-control campaign in April 1951 in the nine provinces with the highest prevalence. The campaign was started in the island provinces of Samar and Leyte where the prevalence was believed to be about 8% among the rural population. There are altogether six mobile teams which travel from village to village; the population is told in advance when the team will arrive and a census is taken. Local sanitary inspectors and other health personnel work with the team and are given training in yaws control. As the teams move on the records are left behind in the charge of the president of the sanitary division who arranges for the follow up of those treated. In this manner the campaign becomes integrated into the public health structure of the province.

Treatment was originally given by injections of 0.6 mega units of PAM for children under ten years of age and two injections of 1.2 mega units each for adults. These doses were changed to accord with recommendations made at the First International Symposium on Yaws Control which was held in Bangkok in 1952. A single injection procedure is now being used. Up to December 1953 1,880,867 persons had been examined and 71,783 treated with penicillin.

Resurveys of the control areas and of all areas in which the prevalence exceeded 10% have been carried out by two teams. The results of one resurvey showed a prevalence of 2.48% in a population of 16,000 persons as compared with 18% at the first survey.

India

There are pockets of yaws in India in parts of the Madhya Pradesh and adjoining States.



Indolent ulceration of the elbow

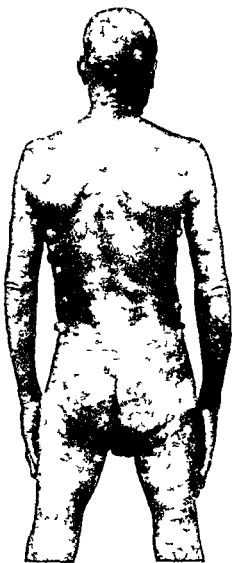
(C J Hackett London)



Juxta-articular nodules in patellar region
(C J Hackett London)



Bone deformation in tertiary yaws
(E. E. Kruizing Rijk Netherlands)



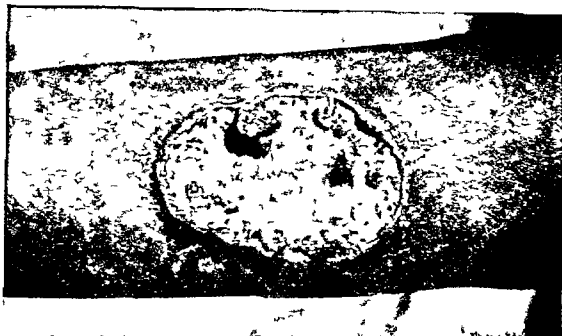
Generalised multiple papillomata
(F N Guimarães, Rio de Janeiro)



Gross gangosa (rhinopharyngitis mutilans)
(C J Hack, London)



Incapacitating plantar hyperkeratotic lesions
(F N Guimarães, Rio de Janeiro)



Indolent ulceration of the elbow

(C. J. Hacken, London)



Juxta-articular nodules in patellar region

(C. J. Hacken, London)



Bone deformation in tertiary yaws

(E. E. Kruzinga, Rijswijk, Netherlands)

national Refugee Organization (IRO) and WHO

Refugees still present a problem in many parts of the world. More than 850 000 Arabs have been living for some years in camps in Lebanon, Syria, the Hashemite Kingdom of the Jordan, and the Gaza area of Israel. As part of the international aid which they receive, considerable attention is paid to the improvement of maternal and child health and to the control of communicable diseases including syphilis.

A serological survey carried out in 1950-51 among 8 259 pregnant women in Lebanon, Syria, and Gaza showed that 5.3% of them were serologically positive for syphilis. WHO arranged for these women to be treated with penicillin and undertook the necessary measures for the general control of syphilis. At the same time, the Organization took steps to ensure that the laboratory procedures used in the diagnosis of cases were of the highest standard.

Other refugees—for example those displaced by the partition of India and lodged in camps in Pakistan—have been assisted through demonstration centres established with international assistance.

Migrants

Consultations have taken place between the International Labour Organisation (ILO), IRO, and WHO on the medical requirements of various countries which have been or are accepting immigrants and on the requirements as to persons who have been treated for syphilis. Countries that accept immigrant labour have different medical requirements, and it is desirable to ensure that persons emigrating from one country to another are not turned back on arrival because of those differences.

In the days before penicillin, persons with positive serological tests for syphilis (excluding those with biological false positive re-

actions) were often considered ineligible as immigrants. However, new and effective methods of treatment with penicillin and the realization that a positive serological test does not always mean active syphilis in adequately treated persons with a negative spinal fluid, have led several nations to change their regulations. This change fostered in part by WHO, has brought hope to thousands of persons in desperate situations who were hitherto automatically precluded from emigration to new countries.

Seafarers

The historical importance of seafarers in the dissemination of syphilis has been appreciated since the time of the classical epidemic of syphilis which spread through Europe after the return of Columbus from the New World. The development of the steamship in the 19th century and the realization of its potential in the 20th century gave rise to much concern about the spread of venereal diseases by seafarers. This resulted in the Brussels Agreement of 1924 which provided for free treatment in the major ports for seafarers suffering from venereal infections. Fifty-seven countries and their overseas territories have adhered to this Agreement, which was established on the initiative of the Red Cross, the International Union against Venereal Diseases, and the International Labour Organisation. WHO took over the administration of the Agreement from the Office International d'Hygiène Publique in 1948.

Because of the striking changes in the nature and extent of the treatment of syphilis and other venereal infections, WHO, on the recommendation of the First Health Assembly¹⁰ assumed the responsibility for studying the possibility of revising the Brussels Agreement with a view to establishing WHO

An active campaign undertaken by the State Government of Madhya Pradesh in the years 1941-45 was successful in reducing the incidence of the disease, but financial stringency brought it to an end and the incidence has since increased.

A campaign to stamp out yaws from this area has now begun, with WHO and UNICEF assistance. It started as a pilot project in the Madhya Pradesh and was extended to the State of Hyderabad in July 1953. It is proposed to extend it later to the other adjoining States. Up to November 1953, 85% of the total population of 79,813 persons in 556 villages had been examined, 3,789 cases of yaws (5.6%) had been found and persons with lesions or a history of yaws and contacts of infectious cases had been treated.

Laos

The population of Laos is estimated at 1.5 million in the four southern provinces, with a population of 610,000, the estimated prevalence of yaws in some areas is between 10% and 15%. Conditions of security and communications allow approximately 60% of the population in the south to be reached by jeep but only in the dry season.

Previously, yaws cases were treated with arsenicals at stationary clinics but a project

for survey, training and mass treatment is now under way, conducted with international assistance by one mobile team. Since April 1953, 97,212 persons have been examined and 5,821 persons including 829 contacts, treated with penicillin.

Liberia

In Liberia, where the population is about 1.5 million malaria and yaws are the main public health problems. It is estimated that approximately 30% of the population are afflicted with yaws. Even in the capital, Monrovia, there is a reported prevalence of 16% to 19%.

With international assistance a survey of a population of 50,000 was begun in March 1953 in the vicinity of Ganta, where malaria is also very prevalent. A house-to-house survey of the Kpaing area began in August 1953 and resurveys will take place at intervals of six months. These surveys will be combined with antimalaria activities. All clinical cases found will be treated with penicillin and contacts will receive preventive doses. In the Bahn area field surveys have so far been undertaken in 16 villages where 4,918 persons have been examined of whom 63.9% were found to have yaws.

Up to December 1953, 14,846 persons had been examined and 10,840 treated (including contacts) in this project.

SYPHILIS CONTROL IN SPECIAL POPULATION-GROUPS

Certain population groups require consideration as units although their individual members may come from many countries. Among such groups are refugees, migrants, and seafarers.

Refugees

The problem of refugees was at its height immediately after the Second World War

The need for controlling venereal diseases particularly syphilis, in vast groups in Europe and Asia was recognized at the time and the importance of reducing congenital syphilis was included in the plans for the maternal and child health activities of the international organizations. Work to this end was undertaken in Europe first by UNRRA and later by the former Inter

risen by 10% since 1946 and is now according to the Lloyds Register for 1952 a total of 90 868 495 gross tons. In the light of this steady increase in tonnage and in floating population the problem of venereal

diseases is likely to hold the interest of maritime nations throughout the world and health administrations may wish further international action with regard to this truly international problem

INTERNATIONAL EXCHANGE OF TECHNICAL INFORMATION

The exchange of technical information is of immense value to countries and its promotion and execution are therefore a basic function of WHO. In effect the Organization acts as an international clearing house for this purpose. It is essential that the latest information on progress in the prevention, diagnosis, treatment and other aspects of treponematoses control be made available to all interested countries so that control activities may be in step with the march of events. Much information is always obtainable from current medical literature but the programmes of health administrations and of WHO yield important data which can best be made known through the Organization. In addition as a result of its operational studies and as a co-ordinator of international research WHO is an important source of knowledge on specific subjects of wide interest.

Expert Committees and Advisory Panels

In recommending technical policies as well as in advising governments on measures concerning treponematoses control WHO must be able to call upon the technical advice of persons who are not only most competent in their field but also representative of the newest trends and of as wide a geographical distribution as possible. This last consideration is in line with the international character of the Organization: it also serves another

important purpose: experience has demonstrated that methods of combating a disease that may be efficient and effective in one country may have little practical value as long as they are not tested and accepted by other countries with similar problems. It is therefore essential when drawing up overall plans for control of a disease to have the benefit of expert views representative at the same time of various technical aspects and of national methods of control. It is principally for this purpose that WHO has established a series of expert advisory panels, each concerned with specific problems.

Technical guidance in WHO's treponematoses activities is provided by an Expert Advisory Panel on Venereal Infections and Treponematoses, the members of which are appointed by the Director General because of their competence in this particular branch of medicine and by expert committees, the members of which are drawn from the panel and the composition of which varies according to the subject chosen for consideration at a particular committee session. At the present time WHO has an expert advisory panel of 73 members from 44 countries upon whose technical knowledge and experience in the treponematoses it may draw.

Four expert committee meetings have been held—two in 1948 and one each in 1949 and 1952. A Subcommittee on Serology and Laboratory Aspects has also held three sessions—in 1949, 1950 and 1953. The tech-

health regulations in this field similar in principle to those for quarantinable or pestilential diseases. No definite steps were taken until the pattern of the new international regulations with regard to other diseases should become clear with the coming into force of the International Sanitary Regulations in 1952. In the meantime on the suggestion of the International Union against Venereal Diseases, the Netherlands Government established the Rotterdam Port Demonstration Centre, with the assistance of WHO. Among the activities of the Centre is the study of certain aspects of maritime venereal disease control and of the functioning of the Brussels Agreement.

The control of venereal disease among seafarers and the place of venereal infections in maritime public health in general were also considered by the Joint ILO/WHO Committee on the Hygiene of Seafarers in 1949¹¹ and will be studied again when this committee meets in April 1954. It is expected that the legal aspects of the Brussels Agreement will be considered by WHO in 1955 and that a study of the proposed WHO health regulations will subsequently be transmitted to governments and to the interested international organizations.

WHO has published a revised edition of the *International list of venereal disease treatment centres at ports* which gives venereal disease clinics in the major ports throughout the world and the hours of attendance. A further edition is due in 1955. Similarly the individual treatment record booklet issued under the Brussels Agreement has been revised and brought up to date.

In its role as administrator of the Agreement, WHO receives complaints from health administrations about services in ports and acts as intermediary between the governments concerned. The exchange of epidemiological information is also encouraged.

WHO was instrumental, through its headquarters and its Regional Office for Europe, in the establishment of the International Anti Venereal Disease Commission of the Rhine, an intergovernmental body on which were represented the five countries sharing the Rhine River system.

Finally, WHO sometimes assists governments directly in the establishment of port treatment facilities for venereal infections e.g. in Karachi, Pakistan.

The technical interest of WHO in maritime venereal disease control has been in fostering standardized methods of diagnosis and therapy among seafarers so as to obtain more uniform treatment schedules and serological tests at ports in different countries. Although wide variations still exist, the introduction of penicillin therapy in syphilis has greatly simplified the previously complicated situation resulting from the need to retain seafarers for prolonged treatment ashore with metal chemotherapy. The facts that penicillin treatment of early syphilis requires only a few sessions and that the patient need not be hospitalized have substantially reduced absenteeism and the number of man days lost in home and foreign ports which is an economic gain for the employer and employee alike and for the government concerned. But new problems have arisen because of the comparative ease with which crews have access on board ship to penicillin given parenterally or orally for therapeutic and prophylactic purposes. This has made post-treatment control and follow up more complicated.

The problem of immediate importance in maritime venereal disease control is early syphilis. In some maritime countries the incidence of early syphilis has been less noticeable in port than in inland areas, but on the other hand increasingly important ports in underdeveloped areas remain very real foci of infection at a time when the tonnage of post-war merchant fleets has

¹ *Wld Hlth Org techn R p Ser* 1950 20

risen by 10% since 1946 and is now according to the Lloyds Register for 1952 a total of 90 868 495 gross tons. In the light of this steady increase in tonnage and in floating population the problem of venereal

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nical reports of these groups have furnished the basis for WHO work against the treponematoses, they are also a valuable source of up to date technical information for physicians, public health authorities and others interested in treponematoses control

Symposia and Other Conferences

WHO fosters exchange of technical information by sponsoring symposia and other international conferences. Such meetings bring together leading specialists from different countries and make possible direct professional contact and exchange of views. For example, an international symposium on syphilis was organized in Helsinki in 1950¹ and was attended by 28 participants from six countries, in the same year, a larger symposium, at which participants numbered 76 and represented 12 countries, was held in Paris¹³. These symposia did much to reorient European medical opinion with regard to the new trends in the treatment of syphilis and to hasten the transition from metal chemotherapy to therapy based on penicillin.

In 1952 an international symposium on yaws control was held in Bangkok and was attended by 39 participants from 23 countries. This symposium covered every phase of yaws control and provided an important forum for the exchange of experiences in the large yaws control projects getting under way in several parts of the world. The technical information which was presented at the symposium was subsequently published in a WHO monograph¹⁴.

An earlier and different type of activity was that represented by the WHO Syphilis

Study Commission to the USA, in which a group of specialists from seven countries spent several months of 1949 in the USA to investigate and evaluate the use of penicillin in the syphilis control programme of the USA as organized by the US Public Health Service. The Commission also observed other aspects of the programme in the USA, among them the technique of contact interviewing and the training of contact interviewers, the morbidity and epidemiological report forms and the mechanical methods used in their filing and analysis and the inpatient facilities provided by rapid treatment centres and the education of the patients carried out therein.

The Commission concluded that the venereal disease-control methods used in the USA could well serve as a guide in planning future programmes elsewhere, provided that they were suitably adapted to local conditions and requirements, that the value of penicillin in the treatment of syphilis was an outstanding USA discovery and that the USA was, at that time, the place of choice for the study of venereal disease problems and control methods. The results of the Commission's study were published in the WHO Technical Report Series¹⁵.

Consultant Aid

Another, more direct, method of exchanging technical information is seen when the Organization provides an expert adviser or consultant for a national health administration. Such technical personnel may be members of the staff of WHO headquarters or of the regional offices or may be experts recruited for assignment to a specific project for a shorter or longer period. The provision of expert advice in this way has been found a most useful type of WHO assistance both in demonstration and training projects and

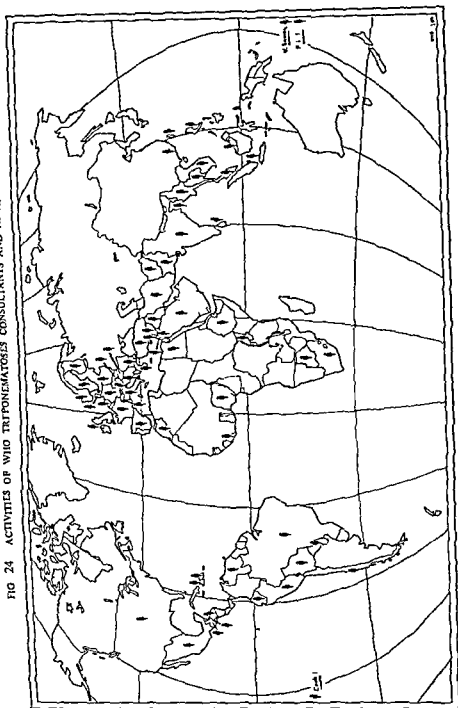
¹ *Transactions of the International Symposium on the Study of Syphilis* (1951) Helsinki (*Acta dermato venereol. (Stockh.) Supplementum* 24).

¹³ *Organisat. on Mondiale de la Santé* (1951) *Colloque International sur la Syphilis* Paris.

¹⁴ *World Health Organization* (1953) *First International Symposium on Yaws Control* Geneva (*World Health Organization Monograph Series* No. 15).

¹⁵ *World Health Organization Technical Report Series* 1950 15.

FIG 24 ACTIVITIES OF WHO TRIPONEMATOSIS CONSULTANTS AND ADVISERS 1948-53



in mass campaigns. The countries which requested and received the services of WHO consultants and advisers during the period 1948-53 are shown in fig. 24.

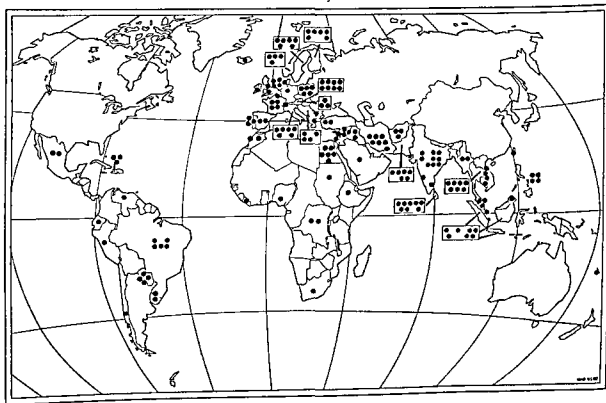
Fellowships and Other Professional Training Activities

The awarding of fellowships and travel grants has become an important and valuable form of Organizational aid to health administrations and to individuals. In the years 1947-53, 196 fellowships and travel grants concerned with the control of venereal diseases and treponematoses were awarded (fig. 25) at a cost of approximately a quarter of a million dollars. The distribution according to WHO Regions was as follows: Africa, 5; the Americas, 21; South East Asia, 47; Europe, 78; Eastern Mediterranean, 30; and Western Pacific, 15.

In some instances the training has been in general public health methods; in others, Fellows have studied syphilis control in clinics or at the city, provincial, or national level; in others again, laboratory aspects or mass campaign practices have been the subjects of study. Many of the fellowships have been granted in co-operation with UNICEF, as part of national treponematoses projects.

The awarding of fellowships supplements the activities of demonstration and training centres and fellowship funds are usually included in such projects in order to provide the best available training for the medical officers and technical personnel who will bear the responsibility for developing the projects after the withdrawal of WHO assistance. Fellowships and travel grants have also been given for studies abroad which will serve WHO's ultimate purpose of

FIG 25 DISTRIBUTION OF 196 TREPONEMATOSIS FELLOWSHIPS, BY COUNTRIES OF ORIGIN, FROM 1947 TO 1953



strengthening the health services of nations and for bringing participants to symposia and international conferences in which WHO has had an interest.

A number of special training courses have been organized with the assistance of WHO. In Simla Himachal Pradesh India teams—composed of a venereologist, a laboratory technician and a public health nurse—from different parts of the country were trained as groups in venereal-disease-control methods. A field seminar organized in connexion with the international yaws symposium in Bangkok was another type of group training. A third example is the group-training courses in maritime venereal disease control at the port demonstration project in Rotterdam.

WHO has also awarded a limited number of grants to universities and laboratories in support of work which has a direct bearing on the activities of health administrations and on WHO programmes. For example grants have been made to the WHO Serological Reference Laboratory at the Statens Seruminstitut Copenhagen and to the International Treponematoses Laboratory Center at Johns Hopkins University Baltimore Md USA. The activities of these centres are reviewed in a later section (pages 97 and 100). It should be mentioned here however that these laboratories also serve to train laboratory workers and technicians sent to them either by WHO or by other interested national and international organizations.

Technical Documentation

One of the principal means of disseminating information is represented by WHO publications and technical documents through which the Organization makes available the information resulting from its own work.

Treponematologists and public health workers will find information of interest to them particularly in three of the organiza-

tions publications—the Technical Report Series the Monograph Series and the *Bulletin of the World Health Organization*. The reports of the WHO Expert Committee on Venereal Infections and Treponematoses and of its Subcommittee on Serology and Laboratory Aspects and the collective views of other groups of experts such as the WHO Syphilis Study Commission to the USA will be found in the Technical Report Series. Extensive studies which are considered to have lasting value and which are of wide general interest but which do not present a collective view of a problem are included in the Monograph Series. This series contains either epidemiological or clinical studies on one specific subject by one individual author—such as the monograph *The epidemiology and control of endemic syphilis: report on a mass treatment campaign in Bosnia*—or a collection of papers by a number of contributors on a certain topic—such as the selection of papers submitted at the First International Symposium on Yaws Control. Finally the *Bulletin* contains in each volume a number of scientific papers prepared either by epidemiologists clinicians or public health workers who carry out assignments directly under the auspices of the Organization or by outside contributors who wish to give their original findings a wide international distribution.

Information included by WHO in any of these publications has always to meet certain special requirements. First and most specific of these is that it should have “international significance”. It is one of the principles of the WHO publications programme that a paper should not be included in an Organization publication if a more suitable vehicle for it exists. Although the expression “international significance” is not easily defined it is meant in general to distinguish information which in contradistinction to that of a purely local or national interest is likely to be of practical value to health workers in a number of countries or to

in mass campaigns. The countries which requested and received the services of WHO consultants and advisers during the period 1948-53 are shown in fig. 24.

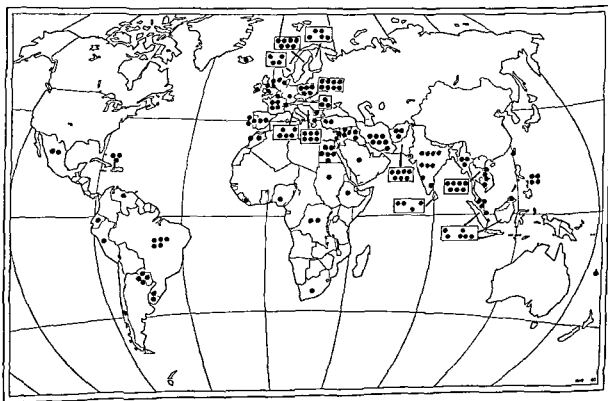
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FIG. 25. DISTRIBUTION OF 196 TREPONEMATOSIS FELLOWSHIPS, BY COUNTRIES OF ORIGIN FROM 1947 TO 1953



and Treponematoses from 18 countries are participating is to evaluate the possible advantages and disadvantages of the use of the new types of penicillin in individual patients both in clinic practice and in mass campaigns. These studies are in many ways parallel to the operational research undertaken when PAM was first introduced in the treatment of the treponematoses and when subsequent simplification of injection techniques and dosage schedules were evaluated. Such research as an integral part of WHO projects is profitable for the modifications which may result in health techniques and campaign procedures can mean greater efficacy at less cost in selective public health programmes.

Another study assisted by WHO is the appraisal of extensive material made available by the Clinical Co-operative Group in Great Britain. A number of venereal disease clinics there have pooled follow up data on different methods of syphilis treatment, in the comparative evaluation of which WHO is assisting.

Similarly WHO undertook in 1952 to compile information on current practices in leading venereal-disease clinics and among venereologists throughout the world in the treatment of early syphilis. This study which ended late in 1953 and the results of which will be published in 1954 indicated a very clear general trend towards reliance on penicillin alone: more than 80% of the 277 venereologists participating in the investigation have adopted penicillin treatment without adjuvant therapy.

THE INTERNATIONAL TREPONEMATOSIS LABORATORY CENTER

The International Treponematoses Laboratory Center was established with WHO assistance at Johns Hopkins University Baltimore in October 1950. The Center

undertakes investigations of certain fundamental problems which can be handled only in a special research laboratory. Also as previously noted it serves to train specialists and technicians from various countries under the WHO fellowship programme and under programmes of other institutions interested in laboratory research. Much interesting and important work is being done the significance of which increases as the years go by.

The first step was to isolate active strains of treponemes from various WHO treponematoses programmes in different parts of the world so that they could be used for comparative studies.¹⁶ Infected material has been prepared by members of WHO field teams inoculated into rabbits or hamsters and forwarded by air to the Center. So far 12 of the 16 strains obtained from patients with venereal or endemic syphilis in Chicago, Mexico, Iraq and Bosnia from cases of bejel in Syria and Iraq and from yaws patients in Thailand, Haiti, Indonesia and Samoa have been successfully perpetuated in rabbits or hamsters. No pinta strain has thus far been successfully established in experimental animals.

It has been observed that there are persistent differences between and within established types and strains of treponemes. It appears that these differences are quantitative rather than qualitative and it is believed that the characteristics of a particular strain are based primarily on its capacity to produce hyaluronic acid. The possible influence of environmental factors including temperature on the characteristics of types and strains of treponemes is also being studied at the Center. It has long been known that hot summer weather modifies the course of syphilis in experimental animals; the influence of temperature on the development of skin lesions

Turne T, B, H, Ulander D, H, & Schaeffer K. (1953)
Bull. Wild Health Org 8: 7

represent the achievements of international co operation in the field of health Studies of results in specific disease control methods which may be readily applied, with modifications, to all countries, surveys of the geographical distribution of diseases and review articles prepared by outstanding experts on the basis of literature from all countries which have contributed to existing knowledge—these are among the types of articles which may be considered to be internationally significant In addition, reports of surveys on specific subjects made by expert consultants on behalf of WHO, after conferring with relevant workers in various countries, and personal investigations covering wide areas, as well as reports or original findings made in the course of WHO field programmes, are considered to have international significance, because they are essentially the outcome of international co operation In following this editorial policy, the Organization endeavours to make a distinctive contribution to medical documentation by providing the research worker,

the epidemiologist, the clinician and the health administrator with technical information to which he might not otherwise have access

Experience has shown that another noteworthy source of technical information is to be found in papers issued by the Organization in limited number as mimeographed documents Such documents are intended primarily for members of expert advisory panels or committees and for internal use by the staff or by laboratory and research institutes with which the Organization has close working relationships These documents can be made available to interested persons but they are not destined for library files or meant to be indexed in reference lists or reviewed by medical journals Papers which are considered of more lasting and general value are often included in one of the WHO technical publications as has already been noted

A list of WHO reports monographs, articles, and other publications on the treponematoses may be found on page 108

INTERNATIONAL CO-ORDINATION OF RESEARCH

The co ordination and promotion of research on health problems are among the functions of WHO particularly when such research is directly related to Organization programmes or projects Such international research can be accomplished by special field studies or by supporting existing institutions The present article attempts to give some idea of WHO's research activities relative to the treponematoses and their control

Operational research and special investigations are carried out to appraise the use and usefulness of various treponematoses control practices in individual projects For example work is under way to evaluate the epidemi-

ological and other data accumulated in the campaign against endemic syphilis in Bosnia This study is based on a mechanical punch card system established at the Central Syphilis Register in Sarajevo where copies of all field records of the entire campaign are available

As was mentioned earlier comparative studies of PAM and the new repository benzylamine penicillin salts in syphilis, yaws and pinta are being co ordinated by WHO in co operation with leading national experts in several countries The purpose of these investigations in which members of the WHO Expert Advisory Panel on Venereal Infections

of the venereologist the treponematologist and the medical officer concerned with the control of venereal diseases and of the non venereal treponematoses

One of the basic changes in outlook in laboratory work in recent years has been the definition by WHO of the specificity of serological tests in terms of the treponemal diseases as a group rather than in terms of syphilis as was the case before 1952. However any conventional antigen for syphilis and the other treponemal diseases can under certain conditions give a false positive result. If different serological techniques are applied a quantitative reagin titre in one country will not necessarily be comparable with that in another or for that matter with that in another laboratory in the same country.

This is due not only to variations of method. Results cannot be standardized by competitive serological conferences between authors of serological tests since variations in testing procedures the world over are considerable and particularly since the composition of antigens used and their reactivity also differ widely. In the past serologists endeavoured to measure one unknown—the titre or the amount of reagin—by two others—either a variety of reagents (of which the constituents were largely unknown) or a variety of methods (for which there were no standards whereby their performance could be judged). The aim of WHO has therefore been to work towards the standardization of the two basic unknowns which might be controlled—the reagents and the methods—so that the unknown titre or reagin can be more accurately and uniformly measured. In 1949 a WHO Serological Reference Laboratory was set up at the Statens Serum Institut in Copenhagen to conduct a series of studies which might lead to the desired degree of standardization of reagents and methods. (A review of the Laboratory's work will be found on the next page.)

Standardization of antigens

Standardization of antigens has become feasible with the development in recent years of defined substances namely cardiolipin and lecithin which replaced the more uncertain lipoidal antigens obtained in the past from animal tissues. The more specific cardiolipin antigens have now been accepted everywhere as the antigens of choice in the serodiagnosis of the treponematoses.

After several years of laboratory studies by members of the WHO Expert Advisory Panel on the Serological and Laboratory Aspects of Venereal Infections and Treponematoses WHO in 1951 established international reference preparations of cardiolipin and lecithin by action of the Expert Committee on Biological Standardization.¹⁸ This has enabled laboratories and manufacturers all over the world to standardize their antigens against a known measure by obtaining samples from the Statens Serum Institut, Copenhagen. These international reference preparations must however be replaced from time to time and continuous study is therefore required.

A monograph by Mary C Pangborn, the discoverer of cardiolipin antigen and her associates at the Division of Laboratories and Research of the New York State Department of Health was published by WHO in 1951.¹⁹ This monograph contains much useful information on the preparation and the chemical and serological testing of these antigens. A revised edition is due in 1954.

Standardization of methods

The establishment of an international reference bank of strongly positive moderately positive and weakly positive reacting freeze dried sera (measured by titre) against

¹⁸ *Wld Hlth Org Techn. Rep. Ser.* (1952) 56, 8.

¹⁹ Pangborn, M. C., Maltaner, F., Tompkins, V. N., Boucher, T., Thompson, W. R., & Flynn, M. R. (1951) *Cardiolipin antigens*. Geneva (World Health Organization Monograph Series No. 6).

is of special interest warmth having an inhibitory effect during the incubation period of syphilis. Such studies are particularly interesting in view of the 'unitarian' theory that the differences among the treponemes causing syphilis, yaws, bejel etc., may result from one single ancestral type of treponeme's having adapted itself to different environmental conditions.

Problems of the immunological relationship of different strains of treponemes are also being studied, as are the degree of immunity built up in infected rabbits judged by their reaction to challenge with another strain, the relationship between specific antibodies, and the development of antibodies during the course of infection. A substantial degree of cross immunity among the various strains of treponemes has been demonstrated, although the results with bejel and yaws strains are less clear than with different strains of syphilis. It has also been shown by cross immunity studies using the *Treponema pallidum* immobilization (TPI) test that a close antigenic relationship among the treponemes is probable.

A new treponemal agglutination (TPA) test has been developed by the Center, the Naval Medical Research Institute in Bethesda Md and the Venereal Disease Experimental Laboratory at Chapel Hill NC. The agglutination of killed *T. pallidum* by the sera of syphilitic individuals had previously been attempted with varying success by a number of investigators but had not proved valuable as a diagnostic procedure owing to difficulties in maintaining a suitable suspension of viable organisms. A procedure has now been found which eliminates these difficulties, and preliminary studies with rabbit sera have shown a high degree of correlation between positive agglutination and the presence of syphilitic infection. Results with human sera have also been encouraging when suitable techniques have been used. A number of laboratory studies on

this problem are now being co-ordinated through WHO.

Another discovery at the Center has been the 'adherence disappearance phenomenon' which has been described in a recent publication¹⁷. Specific techniques developed in connexion with this phenomenon have shown the presence of another specific antibody in the serum of infected individuals which is different from the reagins detected by the usual flocculation or complement fixation techniques.

The Center has carried out many important comparative studies on the penicillin sensitivity of treponeme strains received from various WHO field projects in order to watch for the possible appearance of penicillin resistance, a question clearly of great significance both to the medical world in general and to the mass campaigns under way against the treponematoses. The Center has also been conducting investigations on the potential efficacy of antibiotics other than penicillin against treponemes; these experiments have shown that, though all the drugs tested have some activity against *T. pallidum*, penicillin is still the most effective known agent against treponemes.

INTERNATIONAL STANDARDIZATION OF SEROLOGICAL REAGENTS AND METHODS

The effectiveness of treponematoses control programmes depends to a certain extent upon the efficient conduct of serological tests whether it be a question of the evaluation of the results in the treatment of syphilitic seafarers or of the comparative appraisal of results of mass treatment campaigns against yaws as carried out in pilot and control areas of such campaigns. The laboratory remains essential to the work

cases been dealt with and if so only for orientation purposes) and (c) antigen prepared at the Laboratory from the provisional international reference preparations of cardiolipin and lecithins of 1951 and 1953

The research work on serodiagnostic methods is concerned with lipid antigens on the one hand and the TPI test on the other

Shortly after the publication of the WHO monograph on cardiolipin antigens (see page 99) the serological techniques described therein were tried out with a view to perfecting their performance. The purpose was to enable tests for the acceptance or rejection of new lots of cardiolipin and lecithin to be performed by similar methods at the Division of Laboratories and Research of the New York State Department of Health Albany NY and at the Statens Seruminstitut Copenhagen

Preliminary studies on the keeping qualities of lecithins and cardiolipin antigens have been performed with the Copenhagen complement fixation technique. Using this test method new lots of cardiolipin and lecithins have been compared with the provisional international reference preparations of cardiolipin and lecithins for 1951

Cardiolipin antigens have been compared with crude lipid antigens using different types of seroreactions such as complement fixation tube flocculation and slide flocculation the maturation phenomenon of cardiolipin antigens has been studied in complement fixation experiments and by nephelometric methods and the results of the various studies have been evaluated in close collaboration with the Statistical Department of the Statens Seruminstitut.

In September 1952, the Laboratory was invited by WHO to take part in a co-operative study on the TPI test. The first WHO TPI control serum was prepared in Copenhagen; it was distributed to 25 laboratories in March 1953. Preliminary quantitative results

from ten laboratories (Copenhagen Washington Lyon Palermo Bordeaux Paris (2) Landstuhl Lille and Chamblee) were compiled at the Laboratory in July 1953 and it was found that the variation in titre was great suggesting the need for further investigation

Rabbits inoculated with *T. pallidum* (Nichols pathogenic strain) have been sent to six different laboratories in Europe. The attainment of optimal survival conditions for pathogenic *T. pallidum* *in vitro* has been and still is subject to intense study

In November 1950 14 specimens of blood mainly from syphilitics were collected and freeze-dried serum was prepared for use in a preliminary experiment in which the suitability of freeze-dried serum for serological evaluation as well as the keeping quality at different temperatures was tested in the Copenhagen Laboratory and in laboratories in the following cities: Bergen Calcutta Chamblee London and Tel Aviv. This pilot experiment resulted in the recommendation that further studies on the value of freeze-dried sera in the evaluation of serological methods be undertaken. It was decided that 80 sera from selected donors (syphilitic and non syphilitic) should be freeze-dried. The Laboratory has thus far prepared 19 freeze-dried sera and has collected an additional 28 sera from other laboratories. Early in 1953 samples of the first 30 sera (some in duplicate) were sent out to a number of laboratories of members of the Expert Advisory Panel on Serology and Laboratory Aspects

In March 1951 the WHO Reference Laboratory was requested to take part in the chemical analysis of samples of cardiolipin and lecithin for the Expert Committee on the Unification of Pharmacopoeias. Specifically the Laboratory undertook the phosphorus analysis and the determination of dry weight. In 1953 the chemical results from other laboratories were studied

which existing serological methods in use anywhere in the world can be compared is the logical second step in the standardization work of the WHO Reference Laboratory at Copenhagen

The work on freeze drying has been carried out by a number of laboratories (Bombay, Caracas, Coonoor, Johannesburg, London Madras, Naples, and Osaka) in co operation with the Copenhagen Laboratory, which has, in turn, sent sera for testing to 15 laboratories in different parts of the world (Albany, Bergen, Bombay, Cairo Calcutta, Caracas, Chamblee Coonoor, Johannesburg London, Naples New York, Osaka, Tel Aviv, and Trondheim) so as to ensure as wide a basis as possible for the planned reference bank

At the seventh session of the WHO Expert Committee on Biological Standardization, held in 1953, it was decided that the stability of freeze dried sera had been proved in the preparatory studies carried out by the co operating laboratories and that actual international reference preparations could now be established. Action is being taken accordingly and it will therefore be possible, in the course of 1954, for national laboratories all over the world to obtain samples of international reference sera from Copenhagen—enabling them to guide serological workers in their countries in carrying out tests with a defined degree of seroreactivity, determined by the titres of the freeze-dried sera—in addition to obtaining defined cardiolipin antigen reference preparations

Standardization of methods has also been fostered by the inter laboratory exchange of sera for other purposes for instance for determining the stability of sera in postal transmission. Twenty six laboratories (Montreal Ottawa, Albany, New York, Copenhagen, Chamblee, Havana Mexico, Montevideo Reykjavik, Lisbon, London, Brussels, Bergen, Zurich Palermo Vienna, Helsinki, Ankara, Tel Aviv, Cairo Baghdad,

Teheran Calcutta, Colombo, and Jogyakarta) and a number of WHO field teams (e.g., in Guatemala Simla and Bangkok) have participated in various studies of this kind

Parallel work has been undertaken by the Venereal Disease Research Laboratory and Training Center in Guatemala which has aimed at the standardization of serological tests in Central America under the auspices of the Pan American Sanitary Bureau and WHO Assistance in serological work has also been given in that part of the world by a number of training courses, which have been attended by many technicians from most of the Central American countries. The influence of these courses has already shown itself in the syphilis control programmes in the Americas

As already mentioned, much of the work in standardization of serological reagents and methods has been carried out by the WHO Serological Reference Laboratory in Copenhagen in co operation with a number of national laboratories. To illustrate the type of work undertaken at the Laboratory, a review of some of its activities is given below

THE WHO SEROLOGICAL REFERENCE LABORATORY

The work of the WHO Serological Reference Laboratory Copenhagen falls under four principal headings (1) evaluation of antigens for the serodiagnosis of syphilis, (2) testing samples of blood or serum transmitted to the Laboratory (3) research work on serodiagnostic methods and (4) training of personnel in the use of serodiagnostic methods. In return for this work WHO makes a yearly grant to the Laboratory

Three different categories of antigen have been tested (a) antigen used, or to be used by WHO field teams (work with this type of antigen has predominated) (b) antigen from producers (only in a few instances have such

CONSOLIDATION OF RESULTS

The more specific objectives of international co-operation in treponematoses control have already been outlined (page 67) and the contributions which selective public health projects against these infections can make towards "the highest attainable standard of health"¹ have been suggested. However any group of public health workers which attains a high degree of specialization may sometimes tend to overlook the fact that in the final analysis its work will be productive only if supported by a general programme of disease prevention. Work in conjunction with other health activities (maternal and child health, malaria, tuberculosis, etc.) is desirable whenever initial exploration of the health problems in an area shows technical and administrative advantages. As has already been mentioned, selective public health projects are potential bridgeheads for extension into broader multiphasic public health activities both in urban and rural areas and provide a method of strengthening the structure of local as well as national health services—a basic aim of WHO.²

In the past the advantages and disadvantages of the approach to disease control and to the improvement of health in general by the stationary urban clinic and rural health centre system have been realized. But little information on mass campaigns has been available until recent years when extensive malaria, tuberculosis and treponematoses-control activities have been undertaken by health administrations with international assistance.

That the non-venerable treponematoses can be controlled by mass application of penicillin is indicated by the results observed in resurveys conducted in a number of sample

TABLE VII. RESULTS OF SAMPLE RESURVEYS AFTER 6-12 MONTHS IN CONTROL AREAS OF FOUR YAWS CONTROL PROJECTS

Project area		Number examined	Cases of yaws	
			number	/
Haiti	1st survey	97 ^a	4160	42.6
	2nd survey	12,91	103	0.8
Indonesia	1st survey	1,632	357	21.9
	2nd survey	1,667	96	5.7
Philippines	1st survey	16,072	2,900	18.0
	2nd survey	16,481	409	2.5
Thailand	1st survey	33,338	56,407 ^b	18.0
	2nd survey	353,800	2,241	0.6

and control areas. This is illustrated for yaws in table VII for endemic syphilis the evidence already given in table VI (page 77) and fig. 18 (pages 78-9) speaks for itself. In other instances the results have been less good and the number of new cases represented by reinfections, infectious relapses or cases reintroduced from neighbouring areas has caused some concern. This question is to some extent connected with the intensity of the treatment of household and community contacts in the different projects.

It is evident that the good initial results obtained by a mass "sweep" of the population with penicillin must be followed by resurveys. The mass treatment phase of campaigns against any of the treponematoses is but the first step towards full control and eradication of the infection. Control efforts must be continued even after that phase. Follow-up examinations and where necessary re-treatment must be carried out if the benefits of the original action are not to be lost.³ Governments must provide for this continuity in their planning and in drawing up their budgets. Past and ultimately unsuccessful

¹ From preamble to the Constitution of the World Health Organization. ² World Health Organization (1953) *Handbook of basic documents*, Geneva, 6th edn, vol. 3.
³ Bonne, W. M. G. the, T. & Reynolds, F. W. (1953) *Bull. Wild Hlth Org.* 8: 371.

³ G. the, T. Reynolds, F. W. Krag, P. and Wilcox, R. R. (1953) *Brit. med. J.* 2: 594.

TREPONEMATOSIS CONTROL AS A MEANS TO AN END

Health activities as a means of international co operation are not new but can be traced as far back as the 14th century. However, there has been a significant change in emphasis and objectives since those early times. From the dissemination of information and the setting up of quarantine regulations to prevent the spread of pestilential diseases from one country to another, international health activities have been extended to the pooling of knowledge, experience, and resources to provide direct assistance to countries in communicable disease control and in the general promotion of the health of their people. A principal objective has now become the control and eventual elimination of diseases of public health importance wherever they occur.

Like most other projects of assistance to governments, treponematosi control, whether it be through an urban programme for the control of venereal syphilis based on stationary clinics, or through a mass campaign against a non venereal treponematosi in a rural area, can also serve as a bridgehead for the development of local health services. At some point in the treponematosi control programme, the gains should be consolidated as part of general communicable disease control. The activities required to keep the infection at a controllable level—or to eliminate it completely—should be integrated into the local or national health services. This integration represents a new challenge in modern public health work. As the need for intensive treponematosi control measures diminishes, general public health activities of gradually increasing scope may then take precedence over the fight against this specific infection. Through long term planning, treponematosi control may thus become a means to an end—namely, the strengthening of local health services.

ECONOMIC ASPECTS OF TREPONEMATOSES CONTROL

The economic value of the health of its inhabitants to a community is a subject which is receiving the increasing attention of governments. Studies on this subject are still insufficient particularly as regards the less-developed areas but attempts to translate health into terms of economic productivity and gain have shown how serious are the losses attributed to ill health and how profitable can be action against them. Such attempts can be only approximations yet they have provided a basis for interesting and stimulating discussion.

Several illustrations of this thesis are provided by the treponematoses. It has been estimated that 100 000 man-days of labour are lost annually as a result of venereal diseases in Southern Rhodesia⁴ and in Haiti where yaws was widely prevalent among the rural population the 35 000 to 55 000 persons treated monthly in the joint WHO/UNICEF programme have meant the return to work of approximately 100 000 incapacitated persons and a consequent increase in national production of \$5 000 000 a year.⁵

In some countries it has been possible to estimate directly the loss of manpower attributable to venereal syphilis in military forces, civilian life and industry and to calculate the cost of institutional care of late syphilitics. Thus the disability and cost to the nation from syphilis in the USA is illustrated on page 107.⁶ Efforts have also been made to calculate indirectly the value

of certain preventive measures such as obligatory premarital serological examinations. In the State of California for example it was estimated that, for the years 1949-1950 and 1951 a total loss of \$6 339 274 in productive manpower and domiciliary care was prevented by this screening method and that this meant a yearly saving to the State of \$1 275 364.⁷

The economic loss caused by the treponematoses is reflected in the age groups from which they take their toll in the form of incapacitation, invalidism or the need for special medical care. It is obvious that infancy and early childhood are a period of investment for the family and community. It is considered for example that in the USA the non-productive phase of life extends to the age of 18 years and that this period entails an investment in the child up to that age of more than \$7 000 for a family with an annual income of \$2 500.⁸ In other countries particularly in agricultural areas and where child labour in industry is common the child begins to be productive at a much earlier age even so it is almost certain that up to the age of 15 years the investment in a child greatly exceeds the economic return.

What does this mean in populations in which yaws or other treponematoses are prevalent? It has already been pointed out (page 49) that the age distribution of the non-venereal treponematoses is different from that of venereally acquired syphilis since the former are primarily diseases of childhood while the latter affects those who have reached sexual maturity. This is illustrated

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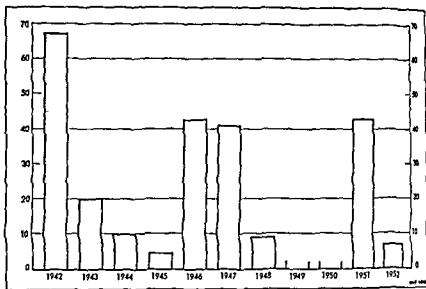
Dubin, L. I., Lotka, A. J. & Spiegelman, M. (1947) *The money value of man*, New York, p. 50.

FIG 26 INCIDENCE OF
YAWS IN HARKERS HALL
AREA, ST CATHERINE
JAMAICA

*Ordinates attack rate per
1 000 inhabitants*

*Mass treatment was car-
ried out during the years
1942-45 1947 and 1951-52
but the results were not con-
solidated and the efforts were
thus largely wasted*

*No data are available for the
years 1949-50*



ful eradication campaigns have made this abundantly clear the rise and fall in the incidence of yaws shown in fig 26 are due largely to insufficient follow up measures. When the reservoir of infection has been sufficiently reduced, the consolidation of the results may be continued under general public health programmes. This will of course, depend on the existence or creation of permanent rural health facilities in the areas concerned. It should be possible for health administrations to take advantage of the progress made and to reinforce the rural health administrations with staff previously engaged in the mass campaigns. Further planning by health administrations, WHO, and UNICEF is needed if vast efforts and funds are not to be wasted and if recurrence of the treponematoses in endemic or hyper endemic form is to be avoided.

Whether the victory will be final also depends on the degree of social advancement in the areas treated. The epidemiological environment is changed by mass treatment, but there must also be a corresponding change in the social environment—and that as soon as possible—if it is not to contribute to a recurrence of the spread of the treponematoses. What has taken many countries centuries to achieve in the past can now take

place in a few decades. There is good reason to hope that the mass campaigns themselves contribute substantially to the health education of the public through the convincing complete disappearance of lesions and the rapid cure.

Parallel health projects in fields other than the treponematoses also help substantially towards this change in the social environment which it should be said has already begun in many areas. WHO is concerned with all aspects of public health and social medicine and especially with the training of personnel in preventive medicine and hygiene. Considerable success is being achieved in the control of malaria and other insect borne diseases such as yellow fever. Immunization against tuberculosis with BCG is widespread, in some areas immunization projects against diphtheria and pertussis have been encouraged. Epidemics of poliomyelitis and influenza call for prompt action and research. Health education and activities in maternal and child health, nutrition, and social and occupational health are being promoted and problems such as drug addiction and chronic diseases are not excluded from consideration. Achievements in such a variety of fields cannot fail to leave an impression in underdeveloped areas.

even more willing to work and work well. This by itself tends to raise productivity. It is also true that, according to the principle of cumulative causation, an improved health standard will per se always tend to improve all other component factors in the plane of living."

In effect, medical advances can serve as "pacemakers" of social change, a view which was pointed out to the United Nations Social Commission. "In the underdeveloped areas, release of the resources of the countries from the tangled undergrowth of mass disease is a prerequisite for development" ¹⁴

The WHO Expert Committee on Venereal Infections and Treponematoses ¹⁵ has pointed

out "Penicillin in mass diseases like syphilis and yaws is indeed an important pacemaker of this kind."

Millions of people are incapacitated by the treponematoses during the most productive period of their lives in areas where national development requires able bodies to assist in agricultural, industrial and other programmes for economic expansion. In such areas the widest possible application of penicillin in treponematoses-control programmes is a means to an end and represents an element in social and economic progress. Much remains to be done nationally and internationally, but the impact of the work under way has already begun to be discernible in many parts of the world.

¹⁴ United Nations (1952) *Preliminary report on the world social situation at a special conference on standards of living*, New York, chapter III, p. 32 (document E/CN.3/67/Rev.1).
¹⁵ WHO Expert Committee on Venereal Infections and Treponematoses, 1953, p. 63.

DISABILITY FROM AND COST OF, SYPHILIS IN THE USA *

Estimated disability from syphilis in man-years

Hospitalization for insanity from syphilis (1950)	42,438
Disability from cardiovascular syphilis, including aneurysm (1949)	12,332
Disability from locomotor ataxia (1949)	2,080
Disability from syphilitic blindness (1949)	39,000

Estimated annual cost of syphilitic psychosis and syphilitic blindness, in US \$

Maintenance of patients with syphilitic psychoses (1950)	41,162,000
Loss of income by patients with syphilitic psychoses (1950)	86,489,000
Loss of State and Federal income tax payments from patients with syphilitic psychoses (1950)	6,790,000
Maintenance of syphilitic blind (1949)	18,750,000

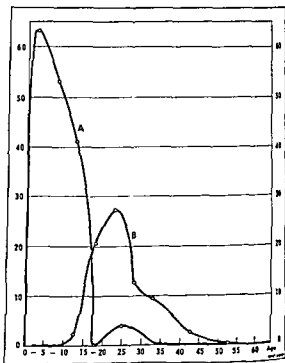
* Federal Security Agency, Public Health Service (1952) VD Fact Sheet, Division of Venereal Disease, Office of Statistics, Issue number 9.

in fig 27, based, for yaws, on material from an area in Jamaica⁹ and for venereal syphilis, on data for an urban area in the USA (Baltimore)¹⁰ It will be seen that more than 42.5 persons per 1,000 had acquired yaws before the age of 15, and that the attack rate after that age was only 1.5 per 1,000. In venereal syphilis, on the other hand, the rate was only 2.12 per 1,000 among those under 15 years of age and much higher thereafter. From a social and economic standpoint however the result in terms of productive manpower is the same: in yaws, the early onset of the disease results in a variety of disfiguring and invaliding manifestations including locked ankles and elbows and plantar and palmar lesions, during the most productive years of life in venereal syphilis, the productive age groups are attacked directly, with consequent immediate absenteeism and incapacitation for work, and with neurological cardiovascular, and other systemic involvement which later causes a further important loss of manpower if the disease is untreated.

Another economic factor is the neonatal mortality attributable to the treponematoses. The higher death rate among congenitally syphilitic infants compared with that of children born of healthy mothers has long been recognized. Moreover, venereal syphilis is known to be the cause of approximately half the stillbirths and abortions in untreated syphilitic women. That this is true to some extent also among pregnant women suffering from endemic syphilis has been contended by Grin.¹¹ There is some evidence that yaws too, may result in increased infant mortality,¹ although it is generally believed that this

disease does not play an important role as a "natural population check." Yaws is more of a crippler than a killer, and yaws control programmes mean that there will be increased manpower for productive purposes rather than more mouths to feed.

FIG 27 ONSET OF YAWS (JAMAICA) AND DISCOVERY RATES FOR EARLY SYPHILIS (BALTIMORE) BY AGE GROUPS



Ordinates: annual rates per 1,000 population
A — Yaws in Jamaica
B — Syphilis in Baltimore

Apart from these profit and loss considerations, there are wider logical grounds on which health programmes should form part of general programmes for social and economic development wherever possible. Myrdal,¹³ for example, has said

"It is true that an improved health standard will imply both a more favourable age structure of the population with a larger part of it in the productive ages and in every age group a people more able and

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even more willing to work and work well. Thus by itself tends to raise productivity. It is also true that, according to the principle of cumulative causation, an improved health standard will per se always tend to improve all other component factors in the plane of living."

In effect medical advances can serve as "pacemakers" of social change, a view which was pointed out to the United Nations Social Commission. "In the underdeveloped areas release of the resources of the countries from the tangled undergrowth of mass disease is a prerequisite for development."¹⁴

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United Nations (1952) Preliminary report on the world social situation with a special reference to standards of living. New York chapter III, p. 32 (document E/CN.5/47/Rev.1)
W.H.E.I. & Org. : An R p 5 - 1952 63 7

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Third Report (*World Health Organization Technical Report Series* 1950 13)

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Kenneth R HILL, R KODIJAT & M SARDADI

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English edition only, 1951, second impression 1952, 52 pages
42 illustrations

5/ \$1 00 Sw fr 4 —

No 6

CARDIOLIPIN ANTIGENS

Mary C PANGBORN, F MALTANER, V N TOMPKINS
T BEECHER, W R THOMPSON & Mary Rose FLYNN

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English edition only, 1951, second impression, 1953 67 pages
1 figure, 21 tables second edition in preparation

5/ \$1 00 Sw fr 4 —

No 11

**EPIDEMIOLOGY AND CONTROL OF
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Report on a Mass-Treatment Campaign in Bosnia

E. I GRIN

The natural course of endemic syphilis including its epidemiological, clinical, laboratory and other aspects has not been adequately described in existing literature. This study represents an important contribution to the limited knowledge on the subject. The environmental factors and their influence on the perpetuation of the infection as an endemic disease and the course of the disease over decades are discussed, and original theories and new considerations are advanced explaining its behaviour in a primitive environment. A description is given of the different stages of the treatment campaign in Bosnia in which more than 35 000 cases were treated with penicillin and promising results obtained. The volume is profusely illustrated with maps, drawings and photographs.

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A collection of papers presented at the International Symposium on Yaws Control held in Bangkok in March 1952 is published here in book form. They deal with the use of antibiotics in the treatment of yaws, the epidemiology of the disease and the modern control methods including the problems of organizing eradication campaigns. The symposium will be of interest to venereologists to all those concerned with the use of antibiotics and to persons responsible for planning or carrying out mass-treatment or control campaigns.

Mixed language edition English and French 1953 second
impression 1953 iv + 418 pages 32 plates 26 figures
83 tables

22/6 \$4 50 Sw fr 18 —

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CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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| 22 March
10 April | Advanced course for waterworks engineers, Netherlands and Belgium
(Regional Office for Europe) |
| 28 March
10 April | Seminar on the Prevention and Treatment of Alcoholism Nordwijk
Netherlands (Regional Office for Europe) |
| 29 March
3 April | Expert Committee on Nursing third session London |
| 9 13 April | Joint ILO/WHO Committee on the Hygiene of Seafarers second
session Geneva |
| 22 30 April | Pan American Sanitary Organization Executive Committee twenty
second meeting Washington D C |
| 29 30 April | Joint Committee on Health Policy UNICEF/WHO seventh session
Geneva |
| 4 May | Seventh World Health Assembly Geneva |
| 27 May | Executive Board fourteenth session Geneva |

FIRST ASIAN MALARIA CONFERENCE*

The First Asian Malaria Conference convened by the World Health Organization met in Bangkok from 21 to 24 September 1953. It was attended by government delegates, representatives of bilateral and international agencies, one member of the WHO Expert Committee on Malaria (fifth session) and several observers (see page 127).

A questionnaire had been prepared by WHO requesting precise information about the present status of malaria control and plans for the future. This was distributed to the various governments of the South East Asia, Eastern Mediterranean and Western Pacific Regions to provide basic documentation for the debates of the conference. The great interest of the governments in the Asian and Western Pacific areas in malaria control was evidenced by the painstaking replies to this questionnaire. These made clear the magnitude of the problem as well as of the malaria-control work now in progress. No fewer than 590 million people live in areas represented at the conference; this number constitutes nearly one fourth of the world's total population. It is estimated that half of these people were living a few years ago in areas subject to malaria fevers, but that in 1952 over 47 million were being protected from this disease.

The conference was opened by His Excellency Dr Phya Boriraksh, Minister of Public Health, Thailand, who gave an address. Addresses were also given by Dr C. Mani, Director of the Regional Office for South East Asia; Dr Paul F. Russell, member of the recent Expert Committee on Malaria of WHO; Dr E. J. Pampana, Chief of the Malaria Section,

WHO Geneva; and Dr F. J. Dy, Adviser on Malaria, Western Pacific Regional Office. Dr Luan Ayurakit Kosol was elected Chairman, Col. Jaswant Singh, Vice Chairman, and Dr K. C. Liang, Rapporteur. Dr F. J. Dy was appointed Secretary.

PRESENT STATUS OF MALARIA CONTROL

Several reports were presented to the conference that confirmed once again that in most countries of the three regions residual insecticidal spraying has been effective in the control of malaria. The results thus far achieved on such a wide scale clearly demonstrate that for a great majority of areas, climate, environment, type of house, habits of population and social conditions do not prevent the effective control of malaria by residual spraying. The cost of malaria control by residual spraying is now so low that only rarely can it be said that malarious communities cannot afford to control the disease.

It is known that the habits of most malaria vectors are such that they are susceptible to control and sometimes even to eradication by residual spraying. In the case of a very few species that prefer to rest and feed out of doors, however, there remains some doubt as to the degree of contact between the insect and the insecticide. The conference noted that in several areas where effectiveness of residual spraying is still to be proved, experimental projects are in progress. For example, the Dutch Government is starting an investigation to find out whether malaria carried by the *A. punctulatus* group can be controlled by these methods, and a pilot project is being carried out by the Government of Sarawak, with WHO assistance, to determine whether *A. leucosphyrus* is suscep-

* This is the report on the First Asian Malaria Conference as adopted by the participants.

ible to this method of control. It was noted with satisfaction that in the Philippines with WHO expert assistance and Foreign Operations Administration (FOA) equipment and supplies, it has already been demonstrated in Mindoro that malaria carried by *A. minimus flavirostris* can be effectively controlled by DDT residual spraying.

During the discussion it became evident that, because certain species of malaria carrying mosquitos rest more frequently on treated surfaces than others, they are more susceptible to control. Therefore, the speed with which a country approaches the end point of malaria transmission will depend in a considerable measure on the habits of the local malaria vectors. In some cases a country may quite rapidly achieve its objective while in others there may be more difficulty because of more elusive anopheles lines.

Apart from the direct influence of anti malaria residual spraying in reducing malaria mortality and morbidity, collateral benefits have been observed, such as lowering general and infant death rates and control of other insect borne diseases, such as plague and cutaneous leishmaniasis—e.g., in several Indian States.

In the countries represented at the conference, no development of DDT resistance in *Anopheles* has been reported. In certain areas, bed bugs appear to have become resistant and flies have not been controlled by residual spraying. The conference was also aware that in Korea lice have not been controlled by DDT. Obviously, any observation of resistance should be carefully controlled as regards all factors, one of which is the potency of the insecticides.

The conference was informed that in some countries supplies of DDT water dispersible powder which were said to comply with the specifications laid down by the WHO Expert Committee on Insecticides actually had deteriorated physically and chemically a

short time after analysis had shown them to be satisfactory. Recommendations regarding storage, packing, and transport of DDT were suggested by the Indonesian delegation. Apparently, physical deterioration of DDT water dispersible powders may be associated with chemical decomposition of about 50% of the insecticide itself. The conference was informed that members of the WHO Expert Advisory Panel on Insecticides had arranged for a series of tests whereby different lots of DDT water dispersible powder would be analysed, subjected to heat treatment to simulate tropical conditions, retested and afterwards shipped to the Port Harcourt Laboratories, Nigeria where they would be stored for months. After three, six, and nine months, samples would be shipped to the laboratories where the preliminary analyses had been conducted, and would be tested again. The object of this study is to determine whether and why DDT water dispersible powders, after storage under conditions of pressure and high temperature, would lose their susceptibility.

SOCIAL AND ECONOMIC BENEFITS OF MALARIA CONTROL

The conference considered the social and economic benefits that may follow malaria control. Government finance officers and legislative bodies whose budgetary requirements usually exceed by far their available financial resources can quite naturally be expected to scrutinize any proposed health projects in terms of fiscal as well as humanitarian returns to the citizens whose taxes must support the programmes. From the countries represented at the conference there have come numerous examples of material as well as socio-economic benefits from all monies invested in malaria control. Well documented experience from malaria-control projects already under way lend increasing support to the statement by Dr Paul F.

Russell that "No country with a serious malaria problem can afford *not* to control malaria" More and more concrete evidence is accumulating to show that investments in malaria-control efforts will be returned many fold in the opening up of lands to agriculture lumbering and mining in the increase in individual and family income through prevention of debilitating illness hospitalization and untimely death and in the removal of obstacles to the building of roads dams communication lines and other facilities so essential to development

The following examples demonstrate but by no means exhaust the variety and magnitude of tangible economic benefits accruing from malaria-control programmes

Agriculture

For many years there has been a familiar slogan in Afghanistan "If you want to die go to Qundus" This notoriety was well deserved for those farmers who tried to work the rich lands in Qundus were inevitable victims of severe if not fatal attacks of malaria Land sold in 1935 for 4 Afghanis per acre (approximately \$0.19) in 1952, the price was 5 000-10 000 Afghanis per acre (approximately \$238-\$476) an increase due largely to absence of malaria

In the Ghuri District of Afghanistan the price of land before malaria control was 300 Afghanis per acre by 1952 when malaria control measures had removed the threat of this disease land in the Ghuri area became highly priced and values reached a level of 5 000-8 000 Afghanis per acre

Ceylon with 12 000 square miles (31 080 km²) of uninhabitable malarious jungle has since malaria control became effective in 1947 reclaimed and brought under irrigation more than 206 square miles (about 5.4 km²) for new settlements More than 91 000 landless people have now been established in 26 new colonization schemes

In Kanara District Bombay State India more than 50 square miles (about 130 km²) of arable land which were fallow because of malaria have now been brought under the plough through antimalaria measures during the past seven years

Work-days saved

In northern Thailand a socio-economic survey established that each malaria case was incapacitated for an average of 7.6 days In DDT sprayed areas with a population of 282 065 more than 50 000 malaria cases are estimated to have been prevented within one year after control began Since about half of the population is known to be composed of workers this means that not less than 25 000 work weeks or 175 000 man days were saved

In Thailand a minimum of 10 000 000 work-days are lost each year because of malaria This represents a loss of not less than Baht 100 000 000 (\$5 000 000) each year—15-20 times the required yearly budget for a permanent programme of malaria control

In India the annual labour losses due to malaria have been calculated at the astounding figure of 171 000 000 work-days in the agricultural population As regards Bombay State for example the annual cost of 15 000 000 work-days lost is estimated at Rs 30 000 000 in wages (\$6,299 874)

Family income

Detailed economic surveys were made among families of all income group in an irrigated area of Mysore State India before and after DDT residual house spraying for malaria control Consideration was given to the actual losses due to malaria through such costs as those of medical and spiritual care of malaria cases lost earnings funeral expenses decreased value of untended lands

and livestock, and prolonged indebtedness. These surveys arrived at a minimum estimate of Rs 498 898 (\$104,766) saved by 730 families during one year of malaria control. In Mysore also, a great increase in milk production was noted following DDT spraying. It was stated that for every rupee spent on DDT spraying there was a gain of 93 rupees during the year, as measured by the comparison with the unsprayed area.

Industrial development

In the Pulikhumri textile mills of Afghanistan, malaria control efforts have achieved an industrial revolution. Before antimalaria measures were instituted, it was difficult to obtain labour to keep the mills operating, and substantial incentive allowances had to be paid to offset the health hazards to which the workmen were exposed. Residents in Pulikhumri town numbered less than 5,000 people. Output of the mills amounted to 20,000 metres (about 21,880 yards) per day. As a result of malaria control the population of the town has risen to 20,000 persons. By 1952 the output of the mills had increased to 35,000 metres per day (about 38,290 yards) and plans have been made to enlarge the factory and install more machines.

Construction projects

In times past construction of highways and other public works in the Philippines has often failed because of the high malaria rates among the workmen. In making their bids, contractors estimated that three men must be hired for every two men they needed on the job. But contractors are now eagerly bidding on Government road building in the Philippines because the Department of Health is guaranteeing protection from malaria by special malaria units. As a result, the bids on new construction projects are being submitted at lower figures than ever

before, and completion of the projects is assured.

In another example from the Philippines the construction of dams and pipelines for the Manila water supply was threatened because of high malaria rates among the workmen. The Department of Health instituted malaria control in the area and the project was completed on schedule.

Effects on population and vital statistics

Before 1946, in Kanara District, Bombay State, India, the birth rate was about 29 per 1,000, and the death rate was 23.30 per 1,000. DDT residual house spraying for malaria control began in the District in that year. In 1952 the birth rate was 33 per 1,000 and the death rate was 14 per 1,000. The malaria death rate dropped in the same District from about 3 per 1,000 before 1946 to 0.4 per 1,000 in 1952.

In Ceylon, the malaria death rates before 1946 varied from 0.8 to 1.8 per 1,000. Following DDT residual house spraying operations the rate has dropped to 0.2 (1952). Birth rates have more or less stabilized at 40 per 1,000 but death rates have dropped from 21 to about 13 per 1,000.

ORGANIZATION METHODS AND FINANCING OF PROGRAMMES

One of the main objectives of the conference was to discuss the best and most economical type of antimalaria service.

Central antimalaria organization

In Taiwan where a four year malaria control programme is in progress there is a central antimalaria organization the functions of which are training, research, planning and standardization of techniques, equipment and formulations. These functions are carried out primarily through the

Provincial Malaria Research Institute and its two branches in the north and in the centre of the island. There are on the island 370 township health stations of which 155 have at least a malaria technician who is in charge of the local antimalaria work. Furthermore there are 21 health centres which include malaria control among their activities.

Various speakers pointed out the need for and the advantages of a strong central malaria-control organization responsible for planning training research and standardization of equipment and formulations. In Afghanistan Indonesia East Pakistan the Philippines and Thailand this type of organization is found though implementation of the control operations is more or less decentralized. As regards surveys laboratory work and assessment of results practices differ in some countries this work is done essentially by the central organization in others the responsibility is shared with local organizations.

It was emphasized that the type of malaria organization in each country will depend on the degree of evolution of the health organization of the country. In a well organized health service like that of Ceylon it was possible to have only a small specialized central antimalaria organization for survey and organization the routine and control operations being integrated with general public health work carried out by medical officers of health. In Mysore also malaria control has been largely integrated in the general programme of rural health units though there is a central organization for direction supervision training and financing. In countries with a less-developed public health service if malaria is the main public health problem it is not feasible to include its control among the general tasks of the medical officers of health. In India with its varying stages of public health development it was found necessary to set up specialized malaria

sections both at the central and at the peripheral levels in many States. In Bombay State after many years of satisfactory malaria-control there is a trend to achieve greater integration with general health activities though the central malaria service has organized appraisal squads that make survey checks in approximately 10% of the villages.

Salaries and allowances of malaria staff

In some parts of India a considerable disparity was noted in the remuneration of malaria workers employed by different agencies in the same area. Similar disparity was reported between malaria officers and health officers of corresponding ranks (e.g. in Punjab). Although the malaria inspector's work is much harder than that of the sanitary inspector the former was paid only the same salary that the latter received.

In Thailand there is no difference in the salary between a medical officer working in a hospital and a malaria officer of the Division of Malaria Control but the medical officer has a much higher income because of private practice. It has become difficult to persuade young graduates to become malaria officers.

Several speakers suggested that provision of free accommodation be considered.

The opinion was unanimously expressed that under payment of malaria personnel made it difficult to keep good men in the malaria service.

Community participation and special taxation

It was pointed out that community participation by supplying voluntary labour has been tried in many places and found to be entirely unsatisfactory. It is often advisable however for malaria-control organizations to hire local labour. Community participation may consist in the provision of funds

transport, and housing and assistance in operations through appropriate education of the public

As malaria control is a service which increases the earning power of a population, raises the real estate value, and contributes to the welfare of the people, it would seem that levying a tax among the inhabitants that directly benefit from malaria control might be justifiable. The conference was informed that in some instances such a tax had indeed been applied, in Mysore State, for example, a malaria tax of 6 pies (less than \$0.01) per person is levied. Even in the USA, in certain areas, a malaria tax has been levied at times and has made possible the completion of permanent antimalaria work. Other examples were given for European countries. Various speakers were of the opinion that other sources of income, such as national sweepstakes or lotteries, would be preferable to a malaria tax, as the latter might make malaria control unpopular, others preferred that antimalaria activities be dealt with by the regular and usual method of annual budgeting. It was emphasized that, at any rate should a tax be levied on the population of a malaria stricken area, it should be applied only after control had been effectively instituted and the population had therefore, already benefited from it. Recognizing that a malaria tax would most probably be unpopular, the conference was of the opinion that any tax that could reasonably be levied should be of a general nature, related to the enhanced economy of the area following the establishment of malaria control.

Financing of malaria control

It was pointed out that in planning malaria control as a service of public health to the people, provision should be made for the necessary funds from national central or local sources. Financial assistance from international agencies should be accepted as

a contribution towards an accelerated expansion of the programme, provided adequate provision is made for continuity of the project once international assistance comes to an end. As the maintenance and stability of the malaria control services are vital for the continued safeguarding of the health of the people, the allotment of adequate funds for the continuation of the malaria-control services should be ensured. The methods of securing funds for this purpose would naturally depend upon local circumstances in each country and the extent to which community participation would be locally available. It was suggested that in some instances it could be a good investment for a national or local government to use deficit financing by bond issue or other means in order to bring malaria transmission to an end point. A public opinion well aware of the social and economic benefits brought about by the control of malaria might assist in creating a public demand for funds. Indoctrination of public officials on the advantages of malaria control should be undertaken in most countries.

PLANNED DEVELOPMENT OF NATIONAL MALARIA CONTROL PROGRAMMES

Priorities in residual spraying programmes

The conference discussed the basis on which priority might be given to certain areas in the planning of national malaria-control programmes. Most commonly the first areas to be put under control are either those where malaria has the highest endemicity or where malaria control will have the greatest economic impact. In some cases as in the Punjab and in Ceylon the deciding factor was that of epidemic conditions. In these countries the first areas to be residually sprayed were those subject to flooding by

monsoon rains in the former and subject to river pooling due to lack of monsoon rains in the latter. It was pointed out that priority in some countries should be given to areas in which there were non immune immigrants.

Many of the delegates agreed that it may be dangerous to the success of a national malaria-control scheme to omit pockets of high endemicity even though such areas do not have economic importance. However it was pointed out that in Bombay at the beginning of the programme villages of less than one hundred people were not sprayed because of the greatly increased cost of dealing with scattered houses. These islands of malaria did no harm to the surrounding areas under control and were useful contrast examples. They are now included in the routine spraying.

Each country in deciding priorities should be guided by a general consideration of all the local factors involved.

Planning for cessation of international aid

The conference noted that there is no certainty that international aid monies will be continuously available for malaria-control programmes and it stressed the need to develop types of projects that could be maintained by routine national or local budgetary funds. It noted with satisfaction that malaria has been almost completely eliminated from Ceylon without foreign aid monies and that to an increasing extent national and local funds are being used in other programmes. The conference further noted that in order to bring malaria-control costs to levels that would be within the range of routine budgetary funds further experimentation is required in organization training and insecticidal practice for greater efficiency.

The conference noted that foreign aid monies are usually given on the condition that the countries continue control measures

and it was believed that usually public demand for residual spraying programmes would ensure continuance of the schemes. It was also pointed out by several delegates that initial costs of control schemes are usually much greater per person than later annual recurring expenses so that once a scheme was well developed the annual cost might be as much as 30% less than in the beginning.

Although one or two delegates were somewhat apprehensive about cessation of foreign aid it was the opinion of the conference that malaria-control schemes would for the most part be carried forward by national or local financing.

Discontinuance of residual spraying when malaria approaches an end point

The conference called attention to the importance in countries where malaria is approaching an end point of determining to what extent and during what time intervals residual spraying might safely be discontinued. No examples of such interruption in spraying have been reported in Asia but this practice has been successfully used in Greece and elsewhere. It was pointed out that there are no guides for predicting when a given country may be expected to reach an end point of malaria transmission and that such predictions may be misleading. In some areas particularly in the equatorial wet, seasonless zones it may be a very long time before malaria transmission is brought to an end point. It was also emphasized that interruption of spraying presupposes not only that the menace of malaria transmission has been removed but also that there are effective safeguards such as a clear understanding of the epidemiology of the disease specially trained and vigilant personnel and particularly an inter-country co-ordination of malaria-control programmes that would minimize the dangers of imported malaria.

The consensus of opinion at the conference was that the time has not yet come in Asian regions when discontinuation of residual spraying may safely be practised, but it is hoped that such time may come eventually

REGIONAL CO-ORDINATION OF LONG-TERM PROGRAMMES

The first problem that confronted the conference in relation to inter country planning was the question as to what extent and how a national malaria control project should be planned or adapted so that help and not hindrance would be given to and received from similar national malaria control schemes in neighbouring countries. The same question applies to certain State projects on the one hand, and to regional programmes on the other. Malaria control is now so effective that countrywide elimination of the disease as a public health problem is foreseeable. But if by lack of inter country or inter state co ordination there is danger of reinfection of malaria free areas from across national or regional borders a vicious cycle might be set up, the attainment of an end point to malaria transmission might be postponed and savings through interruption of residual spraying might be delayed. Obviously for reasons both selfish and altruistic border zones and those areas that have a significant exchange of travellers or immigrants might well be put under effective control concurrently. The uniform practice of control throughout the malarious parts of a region especially in large contiguous areas having similar conditions, even though they fall in two or more national territories or WHO Regions, is clearly an ideal to be aimed at. Co ordination of control as regards methods, timing and boundaries is necessary, and in later stages close integration is desirable in any discontinuation of residual spraying and

in the practice of safeguards against recurrence of transmission. Political barriers should not be obstacles to control programmes.

The conference noted the resolutions that had been adopted by the Regional Committees for South East Asia and for the Western Pacific at recent meetings in which Member countries were requested to envisage the planning of large scale and long term programmes of malaria control to the extent that their resources would permit, and to consider all means of integrating national malaria control programmes into sub-regional regional or inter regional programmes of malaria control.

Several examples of inter-country co-ordination for the control of insect borne diseases were recorded. In Africa, between French Equatorial Africa and the Belgian Congo, co ordination in trypanosomiasis control had been achieved between the health officers of both countries, who are allowed to contact each other and work together in either country without administrative hindrance. Standardization of methods has been obtained and efficiency of work increased. In Bolivia, Chile and Peru after independent initial surveys typhus control has been undertaken under the supervision of an inter country commission consisting of the three health ministers and co ordinated by the Pan American Sanitary Bureau. Health officers assigned to these campaigns go freely from one country to another according to the needs of the control project. Such co-ordination could be extended to malaria control. A pioneer example is being developed between Sarawak, North Borneo and Brunei, with WHO assistance. It is hoped that a similar scheme may eventually include Indonesian Borneo. Such co ordination and co operation would obviously achieve a sharing of knowledge and experience, would effect savings and would permit the pooling of personnel, equipment and supplies.

Mention was made of another case of similar co-operation in the Americas between Venezuela and Colombia for the purpose of malaria control in their common border areas. In this scheme either Venezuelan or Colombian DDT squads may freely operate in the border zones of either country.

There was a general trend of opinion in favour of an informal approach for the present, towards inter-country co-ordination of planning. When large scale programmes have achieved results formal negotiations might be necessary. It was pointed out that international agencies should be included when planning inter-country co-ordination of antimalaria projects. Perhaps the existing health co-ordination committees in many countries of the regions might expand and assist in inter-country planning. The Regional Director for South East Asia reminded the conference that constitutionally it was WHO's task to function as a co-ordinating body in international health work. Co-ordination however could only be achieved with the consent of the very parties who are responsible for the creation of WHO. He thought that co-ordination could be achieved between regions and countries through the medium of the respective regional offices. The regional offices could call in other international organizations that would be interested and helpful.

Unfortunately long term inter-country planning may not be predicated on continuing international aid because of the fact that national or international budgets are usually appropriated on an annual basis.

The conference emphasized that annual or biennial meetings like the present one held under the sponsorship of WHO in different countries would serve a very useful purpose in the co-ordination of inter-country malaria-control planning and operations. Such meetings should consider the organizational as well as the technical aspects of malaria control.

The conference discussed the importance that should be given to the training programmes necessary for the implementation of malaria-control plans including ways and means whereby WHO could help. Such points were raised as the adequacy of the present facilities for training, the feasibility of widening the scope of international facilities already available in certain training centres such as the Malaria Institute of India, with WHO assistance, the question of sponsorship by WHO of malaria training courses in Asia, the helpfulness of WHO visiting lecturers and the need for additional malaria fellowships.

It was the consensus of opinion that the auxiliary personnel needed for malaria control could be trained locally if facilities were available but that it would still be advantageous and desirable that the key professional staff who would ultimately be in charge of control programmes and of training auxiliary personnel receive the benefit of training abroad.

Hope was expressed that regional malaria training courses in malariology such as those conducted in Singapore with the assistance of the League of Nations might be provided with WHO assistance for the benefit of auxiliary as well as key malaria-control workers. It was considered not enough for key personnel to obtain experience in their own countries only; however good and successful their own schemes might be. Some expressed the opinion that countries where institutions are available for the training of key personnel should offer or continue to offer training to personnel of other countries in addition to their own and that each country should decide the extent to which it will use training facilities abroad.

There was general agreement that adequate training should be given to sufficient numbers of auxiliary personnel for the implementation of local programmes. The conference stressed the importance of sending

WHO visiting lecturers to malaria training centres. It was emphasized, however, that these lecturers should be conversant with the problems of the countries or region from which the trainees come.

WHO could render valuable help in supplying books and teaching equipment and materials to malaria institutes, and in disseminating information on the methods, techniques, syllabuses, etc., being used in various countries.

CONFERENCE RECOMMENDATIONS

The First Asian Malaria Conference made a number of specific recommendations regarding malaria control.

Present status of malaria control

The conference

Having discussed the present status of malaria and its control in Asian countries.

Having noted with satisfaction that large numbers of people are being protected by modern methods but having also noted that relative to the whole problem only a beginning has been made,

Realizing that very considerable additional support, financial and otherwise, will be required from governments and knowing that such support will require substantial justification.

RECOMMENDS

that every effort be made to evaluate carefully the results of antimalaria projects and to measure morbidity and mortality rates not only for malaria but also for other diseases affected by control measures, and in particular, to obtain more precise measurements of economic benefits and a clearer estimation of social improvements resulting from malaria control.

Organization methods and financing of the programmes

The conference

Having considered various types of organization of malaria services,

CONCLUDES

that every country where malaria is a major public health problem should possess a permanent antimalaria organization adequately staffed with adequately paid personnel, and that where malaria until recently has been a problem there should remain an organization adequate to cope with any recurrence of the problem.

While there are advantages in decentralizing the operations of malaria control a central organization is necessary to deal with research training of personnel assessment of results and standardization of methods equipment, and supplies. In large countries where State or provincial autonomous antimalaria services may exist the central national organization should give technical guidance and higher training and should assist in co-ordinating the activities of the State or provincial malaria services on a nationwide plane.

Planned development of national malaria control programmes

The conference,

Having considered the possibility that foreign aid monies now provided for residual spraying control of malaria may one day no longer be available.

RECOMMENDS

- (1) that in the planning and carrying out of national control programmes every effort be made to reduce per person costs to a point where they can be met by routine budgetary funds,
- (2) that with a view to increasing efficiency and lowering costs further experimentation

be carried on in the organization of malaria control schemes the training of personnel and insecticidal practice

Regional co-ordination of long term programmes

1 Co-ordination of planning

The conference

Impressed by the enormous impetus acquired by malaria control in most of the Asian countries

Appreciating the invaluable assistance given to many governments by international and bilateral agencies and organizations

Hoping that such assistance may be continued until the objective of the elimination of malaria as a major public health problem is obtained and

Convinced that it is highly desirable to obtain malaria control simultaneously in as large areas as possible both for increasing the efficiency of the campaign and for saving expenses and eventually discontinuing the campaign after the end point of malaria transmission is reached

RECOMMENDS

(1) that in planning malaria-control programmes the principle of merging the areas of control both within and outside the borders of the countries concerned, on an inter country intra regional and inter regional plane be followed and

(2) that WHO offer appropriate assistance for the co-ordination of national plans through its regional offices and if need be, through other suitable methods such as inter regional conferences and committees

2 Training

The conference

Having considered the importance that should be given to training programmes necessary for the implementation of malaria control plans and

Having discussed the possible role of WHO as regards this training

RECOMMENDS

(1) that governments endeavour to provide suitable training to adequate numbers of malaria-control personnel of all levels

(2) that WHO explore the possibility of convening periodic meetings on the organizational and technical aspects of malaria control which would provide an excellent medium for an interchange of ideas and experiences

(3) that WHO assist governments in training local malaria-control personnel by providing fellowships visiting lecturers or consultants and regional malaria training centres by supplying books and teaching equipment and materials and by disseminating information on methods and techniques being used in various countries

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CONTROL OF INSECT VECTORS OF DISEASE

WHO Symposium, Rome — October 1953 *

The reliance placed on chemicals during the past decade in the fight against insect vectors of disease and the failure of some of the commonly used insecticides to maintain control of certain species have given rise to complex problems. The nature and significance of these appeared to justify a broad review by a group of experts in order to formulate so far as was possible both immediate and long term plans. In consequence a symposium on the control of insect vectors of diseases was convened in Europe jointly by the Regional Office for Europe of the World Health Organization and the Istituto Superiore di Sanità Rome. This symposium was held in the premises of the Institute in October 1953 and was attended by 24 experts from 11 countries with a wide geographical distribution. (The names of the participants are given on page 134.) Professor P. A. Buxton, C.M.G. F.R.S. of the London School of Hygiene and Tropical Medicine was Chairman.

Eighteen papers were presented at the various meetings. These will be published in the *Rendiconti Istituto Superiore di Sanità*¹. The more important findings which arose from these papers from the lectures delivered and from the discussions are set out in this report.

GENERAL

The purpose of the symposium was to discuss the control of the insect vectors of human diseases. It was a matter of general agreement that the principal method of control was the use of insecticides and the most difficult problem the development of resistance to insecticides.

It is evident that resistance develops through a complex chain of events. Nevertheless the problems posed are not more difficult than those already solved in comparable fields. Given detailed study of insect physiology and biochemistry and free research an eventual favourable outcome is a reasonable certainty.

DEFINITION OF RESISTANCE

To avoid misunderstanding of the use of the term "resistance" the following definition was agreed upon for use in the discussions.

"Resistance to insecticides is the development of an ability in a strain of an insect to tolerate doses of toxicants which would prove harmful to the majority of individuals of a normal population of the same species. The term behaviouristic resistance describes the ability to avoid a dose which would prove harmful."

EXTENT OF THE PROBLEM

Since the first detection of significant resistance of the housefly to DDT in Italy in 1947 the problem has been recognized in at least 32 countries. Published records appear to indicate that it involves approximately 35

This report was prepared by a drafting committee, at the express wish of the participants in the Symposium on the Control of Insects, Vectors of Disease which was held from 6 to 31 October 1953 in Rome. A previous article, based on documentation prepared for the symposium, appeared in the *January Chronicle* (1954 & 3).

Copies of the relevant issue of the *Rendiconti* can be supplied by the Istituto Superiore di Sanità, Viale Regina Margherita 299 Rome Italy or may be obtained on request from the Regional Office for Europe, World Health Organization, Palais des Nations, Geneva, Switzerland.

species of insects of medical or pestiferous importance. A number of the records are not conclusive, but in 26 cases the reports have been confirmed by experiment and involve 19 insect vectors of disease.

The resistance of the housefly to DDT and other chlorinated hydrocarbon insecticides is almost worldwide and is the most important current aspect of the problem. The failure permanently to control the fly by the use of insecticides has, at least for the moment, interfered seriously in the fight against infant diarrhoea and dysentery—diseases which are reported to owe their transmission to flies in up to one third of cases in certain outbreaks.

Probably the greatest value of the new insecticides is in the control of malaria, but, as has repeatedly been observed, public support for programmes is largely related to control of the housefly which to the average person represents a greater nuisance than the malaria carrying mosquito. To the extent that programmes no longer effect satisfactory fly control, public support for malarial control by insecticides undoubtedly does diminish in some communities.

Of great potential importance is the appearance of increased resistance among certain species of anophelines. In most instances this resistance has not developed to the extent that control of the disease is jeopardized, but an appraisal of the problem and advance planning appear to be an absolute necessity. Eight species of malaria vector have been reported to show some degree of acquired resistance but not to an extent sufficient to interfere seriously with control programmes. Among mosquitos, high resistance has been developed by certain troublesome species, particularly the salt marsh mosquitos, *Aedes sollicitans* and *Aedes taeniorhynchus*. *Aedes nigromaculis* has become resistant in California as has *Culex tarsalis*, a vector of encephalitis.

At least five species of flea have been

reported resistant, one of which is the human flea, *Pulex irritans*. The resistance of body lice in Korea and Egypt is sufficient to preclude their successful control by DDT but they succumb readily to certain other chlorinated hydrocarbon insecticides, as for example, BHC. Another disease vector which has developed resistance is *Triatoma*, the vector of Chagas' disease in some parts of South America. In addition to these known disease vectors, bed bugs and several species of roach and a few ticks have been reported to have developed resistance.

It appears essential, therefore that attention be directed to a careful evaluation of resistance as it arises in different countries and that some machinery be established to exchange information on all aspects of resistance including the possibility of other measures of control.

Although the problem is a serious one it has been exaggerated. Resistance among the more important disease vectors is limited, and this is encouraging in view of the large quantities of DDT and other insecticides used throughout the world during the past six years. Other chemicals now available are capable of controlling species which have acquired resistance to DDT, with the exception of the housefly and possibly two or three species of mosquito. Development of resistance to the new chemicals is also probable but the present range of compounds is such as to offer an interval of time for better elucidation of the mechanism of resistance and for devising means to meet the situation. Certainly, there is no time to spare.

Various members of the symposium suggested methods for the future orientation of vector control programmes both in the presence and in the absence of resistance and these are described in the next section of this report. These procedures appear to offer the best prospects for maintaining control of vector borne diseases even in the presence of resistance.

SUGGESTIONS FOR FUTURE ORIENTATION OF INSECT CONTROL PROGRAMMES

Early recognition of resistance

An attitude of careful watchfulness should be maintained to detect the earliest indications of resistance among species now susceptible. It is suggested that a widespread surveillance programme be initiated to determine the susceptibility status of vectors to insecticides.

The first indication of resistance to insecticides is generally observed in the field. However, this is only qualitative and reproducible quantitative tests carried out in the laboratory under controlled conditions are required to establish that resistance has developed except in instances where resistance is advanced. The test developed for use in the global WHO sponsored survey of the susceptibility of body lice to insecticides is an example. Test methods of equal simplicity and effectiveness should be developed for other insects.

Base lines for the susceptibility of insects of medical importance to the modern insecticides should be determined. An attempt should be made to establish by laboratory methods the median lethal doses of the more important chlorinated hydrocarbons and organophosphates to *Musca*, *Anopheles* sp., *Aedes* sp., *Culex* sp. and other insects of medical importance.

The figures for contact and residual toxicity could be expressed as micrograms per gram of body weight regardless of the method used. Although microloop and microsyringe give this figure directly conversion factors should be ascertained so that field methods of test using treated surfaces can be expressed in this basic figure.

Before vector-control programmes using insecticides are initiated it is recommended that estimates be made of the sensitivity of insects to various insecticides establishing a base line of susceptibility of the species con-

cerned. Tests should be continued during the development of the field work.

Improvement of existing methods and development of new techniques

Prospects for finding substitute chemicals for the control of insects already resistant to the chlorinated hydrocarbon insecticides are favourable. Perhaps the best possibilities are for the organic phosphorus type of insecticide to which insects have not as yet developed resistance of any significance.

To ensure more effective means of controlling insects every consideration should be given to methods which may replace, supplement or improve the commonly used techniques or materials. Indiscriminate spraying which has probably been a contributory factor in the development of resistance should be avoided. Every effort should be made to reduce the breeding possibilities of insects by use of environmental sanitation methods. Even in those cases where insecticide control is still effective the methods of sanitation should be applied. These permanent methods of control should be instituted wherever feasible so that less dependence on insecticides will be necessary. Drainage filling, impoundments flushing streams, water level management in impounded areas and destruction of aquatic vegetation are measures known to accomplish control under certain conditions. It is strongly felt that community wide sanitation programmes should be an integral part of all insect control undertakings.

Habits of personal hygiene and improvement in basic living conditions are the foundations for any long term programme of lice control.

The use of chemically related insecticides against both the adults and the larvae of the same species should not be carried out simultaneously in the same area, except in cases of emergency.

The use of repellents in disease vector control is still a largely unexplored field. Adequate research in this field might result in new approaches to the control of insect borne disease and it is suggested that research in this direction be undertaken.

Because of the extent of migration of flies, it is likely that attractants will prove most satisfactory when employed in a community-wide programme. It is possible that the use of attractants in permanent bait stations may offer an effective and economical way of controlling flies in some situations. Further research should be undertaken to find materials more effective than molasses, one of the most commonly used attractants.

Insecticides should be used as conservatively as possible and further exploration should be conducted for biological methods of control. Research into such methods for mosquito control seems warranted. Viruses, bacteria or protozoan organisms with a selective action against insects might be identified, cultured, and disseminated for controlling mosquitos in the same way that organisms have been disseminated for controlling certain agricultural and forest pests. Flies are known to be attacked by fungi and certain arthropod parasites, and it is possible that research may lead to the discovery of useful organisms for the control of this vector.

The need for fundamental research on insect populations appears to be urgent. The development and use of quantitative methods for estimating population densities is highly desirable.

Testing of new insecticides

Some of the newer insecticides, including the important organic phosphorus group, promise success in the control of insects resistant to the chlorinated hydrocarbon group. It is suggested that a continuous programme of research be initiated to develop

these and other types of insecticides or effective combinations of suitable materials. This phase of research should not terminate at the laboratory stage. It should be followed by their controlled use in the field so as to determine in advance whether insects in different parts of the world are capable of developing resistance to them. Only those materials to which insects do not rapidly develop high resistance should be relied upon for practical long term use. Investigations should also be carried out to determine the most effective manner of using insecticides to avoid or delay the development of resistance.

Toxicity of insecticides to man, and protection of personnel handling them

DDT, BHC, chlordane, dieldrin and a few other similar compounds, have been extensively used for insect control without any recorded example of acute or chronic poisoning, exclusive of accidents resulting from gross misuse, although many hundreds of field operators have inevitably been exposed to these chemicals. This fact is reassuring in areas where spray control has been or will be carried out.

Certain other chemicals such as parathion used for the control of agricultural pests have caused fatalities and cases of serious poisoning. However the number of these accidents has decreased despite increased use of parathion and many related compounds. Experience indicates that the introduction of new chemicals or of old chemicals for new purposes may lead to danger but this is not necessarily serious or unavoidable.

Accidental poisoning usually results from carelessness. Some carelessness is often inevitable when a poisonous substance is handled by many people. It is the duty of those responsible for insect-control measures involving the use of chemicals to see that the use and distribution of the material is

undertaken only by trained staff using adequate and well designed equipment. Some instruction in simple practical precautions must be given and facilities for personal cleanliness provided. Arrangements should be made for the prompt and efficient notification and medical treatment of any case of suspected poisoning in insect-control teams.

It is possible that new and unsuspected reactions in man may follow the repeated absorption of a chemical in small quantities. The existence of any such dangers associated with the handling of a newly developed chemical can be recognized earliest by an adequate general medical surveillance of men most exposed to such insecticides.

It is suggested that further research be carried out on methods for determining the quantity of toxic substances in the atmosphere consideration being given to the international standardization of such methods.

Toxicological studies on new insecticides should be carried out concurrently with biological research so as to enable their rapid and efficient use in programmes where man is exposed to them.

BASIC PHYSIOLOGICAL RESEARCH REQUIRED ON INSECT RESISTANCE

We are insufficiently informed as to what causes death when insects are exposed to insecticides and as to the biochemical and physiological bases of resistance. It is highly improbable from what has already been observed that any single measure can be expected to provide an overall solution. Consequently it is of the greatest importance to obtain as prompt and complete a definition as possible of the physiological aspects in each situation where resistance may arise so that counter-efforts may be directed towards specific goals. The likelihood that these goals will differ from one situation to another should also be recognized and accepted.

The areas in which the greatest amount of research appears to be required are the following:

1. General research

(a) Expansion of basic research on the physiological functions of normal insects

(b) Analysis of physiological mechanisms of intoxication and death for all insecticides in widespread use

(c) Development of the necessary micro-analytical methods for determining insecticides and their metabolic derivatives in insect tissues

(d) Identification and detailed analysis of resistance mechanisms for all cases where resistance occurs

(e) Development of the physiological basis for alternative methods of controlling resistant insects for example basic studies of attraction and repellence and of other factors in behaviour

2. Specific laboratory research

(a) Studies of the manner in which systemic insecticides are metabolized by the insect body to produce toxic products

(b) Studies of how and where DDT is stored in the tissues. Is it excreted? If so in what form and how?

(c) Development of synergists for protection of new and known insecticides against metabolic breakdown

(d) Development of improved insecticides from those groups of compounds (e.g. organic phosphates, pyrethrins and analogues) resistance to which seems to be less readily developed

3. Specific field research

A survey should be made in all areas where adequate laboratory facilities are available of the ability of available strains of *Musca* to absorb and metabolize DDT, the purpose being to gain an understanding of the relative importance of absorption and metabolism in DDT resistance.

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WHO Publishes Information on Quarantine Measures and Vaccination Requirements

WHO has published, as a supplement to the *Weekly Epidemiological Record** a review of quarantine measures and vaccination certificate requirements applied by countries to travellers arriving within their borders. The information gives the situation on 5 March 1954 and is concerned particularly with cholera, yellow fever and smallpox. Also included is a statement indicating whether specific countries and territories are party to the International Sanitary Regulations. This publication should be of interest to health authorities to airline and shipping companies, and, in general, to all those concerned with the international traffic of passengers and goods.

Wkly epidem. R. 1954 29 S ppl me 11 to N 9

1953 Poliomyelitis Epidemic in Sweden

A recent number of the *Weekly Epidemiological Record* reports that the 1953 epidemic of poliomyelitis in Sweden "appears to be the worst recorded in the country". The following statistics are given: "Provisional totals of paralytic cases reached 3 029 (as against 2,596 in 1936 the highest figure recorded since 1919). The provisional number of all cases (including paralytic cases) reached 5 084 against 3 112 in 1936 and 2,716 in 1944. Stockholm town and department were the most affected areas with 30.5 per cent of the cases reported during the year. The peak of the epidemic was reached in October with 764 cases during the month of December the total fell from 856 to 352."

Wkly epidem. Rec. 1954 29 46

GENETIC ASPECTS OF DEVELOPMENT OF RESISTANCE BY INSECTS TO CHEMICAL INSECTICIDES

The basic genetics of the housefly require full study. The collection of mutants is an essential prerequisite to this. A search of mutant genes of natural populations could give data illustrating genetical differentiation. Since the duration of this basic study cannot be predicted, specific efforts might usefully be directed in the meantime to research on the genetical factors controlling resistance in stocks which have developed high tolerance to a given insecticide through different physiological mechanisms and on the genetical relation of resistance to different insecticides.

Extensive data are needed on the effect of selection on the development of resistance and the fate of the genes for the different forms of resistance in natural and laboratory strains not submitted to selective pressure of toxic agents.

The dominance relation between the genetical factors responsible for resistance and for susceptibility should be better understood. In fact, any form of even incomplete dominance of the factors controlling resistance is of great importance for the speed of the development of high tolerance in strains under selective pressure.

All the aspects of resistance should be considered—namely, knockdown kill, knockdown/kill correlation, and, finally, effect of external factors on the tolerance of selected strains.

Special encouragement and assistance should be given to the continued study of the biology and ecology of resistant and non-resistant strains of insect vectors of disease in various environments.

Research should be expanded to obtain more information about the normal insects, the mode of action of insecticides and synergists, and the nature of the resistance mechanism. This may guide chemists in the preparation of more suitable materials.

INTERNATIONAL ACTION AND CO-OPERATION

The participants in the symposium felt that in future work directed to the control of insect vectors of disease it was important that co-ordination of research and development of standard methods should be undertaken at the international level. It was suggested that initially this work might be concentrated on three main objectives:

(1) collection of data on test methods for the detection of resistance in insects of medical importance with a view to developing and disseminating a set of recommendations on resistance detection.

(2) stimulation of suitable institutions and laboratories in different parts of the world to carry out tests on new insecticides so that development of resistance may be assessed before large scale operations are undertaken.

(3) action designed to secure worldwide recognition of the significance of the resistance problem with a view to securing the substantial expansion of research required to maintain high standards of vector control throughout the world.

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Portals of entry and distribution of virus in the body

Laboratory and epidemiological evidence indicates that poliomyelitis is a highly infectious disease spread by intimate association with infected persons. It is probable that the virus is actually transferred directly or indirectly by means of pharyngeal excretions and faecal matter. It used to be believed that the disease was spread mainly by respiratory droplets but the present concept is one of transmission chiefly by faecal contamination as occurs in intestinal infections such as bacillary dysentery.

It is now thought that the portal of entry is usually the mouth and that the primary site of infection is in the pharynx and the rest of the alimentary tract. How it spreads from the primary site to the central nervous system is not completely clear but the recent finding of virus in the blood stream both in man and in monkeys and chimpanzees has suggested that the virus may reach the central nervous system by the blood.

During the incubation period the virus appears more or less simultaneously in the throat, the blood stream and the intestinal tract. Virus can subsequently be demonstrated in the throat for about ten days and in the faeces for as long as 12 weeks although about half the patients no longer excrete virus by three weeks after the onset of the disease. The earlier concept that the poliomyelitis was mainly neurotropic is no longer tenable; the virus evidently has an affinity for the alimentary tract and perhaps for other tissues.

Immunity in poliomyelitis

The best index of immunity to poliomyelitis may be obtained from a study of distribution of the disease in various age groups particularly if correlated with results of serum antibody determinations. Experience indicates

that most primary infections are acquired in childhood.

It is still uncertain whether solid and durable immunity is conferred by a single infection or whether it is dependent upon repeated exposure. Evidence suggests however that a more durable immunity is produced by repeated exposure such as occurs in areas of high environmental pollution.

There are three known types of poliomyelitis virus: Type 1 (Brunnhilde), Type 2 (Lansing) and Type 3 (Leon). It is becoming increasingly evident that the presence of Type 2 antibody in the general population as determined by serum antibody surveys runs parallel with that of antibodies for the other two types of virus so that determination of Type 2 antibody has been used as an indication of experience with the other types.

From experiments on primates it appears that the level of serum antibody plays a role in determining resistance to infection but observations are as yet insufficient to establish a similar correlation with respect to man. While circulating antibody does not necessarily prevent alimentary infection in man it may well serve to interfere with spread of virus to the central nervous system and therefore with the production of paralysis.

Advances in laboratory techniques in poliomyelitis

The study of poliomyelitis has been revolutionized by the introduction of the method of cultivating the virus on tissue-cultures which is easier and more accurate than the older methods in which monkeys were required. This tissue-culture technique can facilitate the study of the basic immunological behaviour of the disease as well as be used for the isolation and antigenic typing of viruses. It also offers possibilities for the development of a vaccine.

In parts of the world where monkeys can easily be obtained isolation of poliomyelitis

POLIOMYELITIS

Poliomyelitis a health problem of increasing importance, is the subject of a WHO expert committee report which aims to give an account of present concepts of the essential nature of this disease, with a review of recent advances that have been made, especially [in] methods of diagnosis and possibilities of prevention'.¹ There follows an adaptation of the summary and conclusions of this report by the Expert Committee on Poliomyelitis

Epidemiology

Poliomyelitis is an infection found in all parts of the world paralytic cases have been reported from all continents and many islands. It is of interest that the paralytic form of the disease which before the Second World War was thought to be rare in the tropics, is being increasingly recognized in such areas.

Both climate and season exert an effect on the epidemiological behaviour of the disease in temperate regions of both hemispheres poliomyelitis is more prevalent in summer and autumn than in winter, while in tropical areas cases occur more uniformly throughout the year. The reason for this phenomenon is not yet known.

It is believed that poor sanitary conditions greatly facilitate the spread of the poliomyelitis virus. Flies have been incriminated as potential sources of infection but though this may be true in areas where they have free access to faecal matter, there is no evidence that they play an essential role. In particular flies do not appear to become actively

infected with the virus and therefore do not serve as reservoirs of infection but merely as mechanical carriers.

Socio economic factors particularly crowding, affect the age distribution of the disease, for example, children are apt to be infected at an earlier age in urban communities than in rural areas. When the infection does strike in the older age groups however the results tend to be much more severe.

Clinical features

'The manifestations of infection by the virus of poliomyelitis range from an inapparent infection to a severe paralytic illness. In some countries the only form of illness regarded as indicative of infection is an acute febrile disease usually followed by paralysis. The report stresses that paralysis is actually an infrequent complication of poliomyelitis infection, and that most persons who become infected either show no symptoms or else develop a milder illness, which may or may not show evidence of involvement of the central nervous system'. While the paralytic form of the disease is readily diagnosed, it is difficult to make a diagnosis of the non paralytic form since many other agents cause an aseptic meningitis that can be differentiated from non paralytic poliomyelitis only by elaborate and time consuming laboratory tests.

It is interesting from a clinical standpoint that factors other than the virus itself may predispose to or precipitate the development of paralysis—for example genetic and hormonal factors overexertion and specific trauma, especially tonsillectomy and certain intramuscular injections.

¹ *Wld Hlth Org. techn. Rep. Ser.* 1954 81 68 pages. Price 3/6, \$0.50 or Sw. fr. 2.— Published in English and in French.

avirulent strains or to attenuate virulent strains of poliomyelitis virus so that they may be safely administered by mouth in the hope that natural infection and its resulting immunity will thereby be simulated. Efforts are also being directed towards the development of a vaccine containing chemi-

cally inactivated virus prepared from tissue cultures. This work is still in the experimental stage and there is as yet no direct evidence that such preparations can induce resistance to poliomyelitis in man although it is known that antibody develops following inoculation.

RABIES

The second report of the WHO Expert Committee on Rabies¹ reviews the knowledge gained in the past three years on various aspects of rabies control particularly on antirabies hyperimmune serum and on living virus vaccine cultivated in the chicken embryo. It also reports the results of WHO-sponsored field trials of the latter in mass vaccination of dogs in Israel and Malaya.

New developments in antirabies vaccines

Experimental work and immunization campaigns have shown that vaccine prepared from chicken-embryo adapted Flury strain at the level of 40-50th egg passage is of high immunogenic potency for dogs; it has also been found satisfactory for the immunization of cats. At about the 180th egg passage the Flury strain became non virulent for adult mice and rabbits injected intracerebrally. Preliminary experiments also demonstrated that at this stage it retained its antigenicity for dogs and cattle and was entirely devoid of pathogenicity for the latter when given intramuscularly.

Another chicken-embryo modified strain of rabies virus the Kelev strain has been developed and has been found devoid of pathogenic properties for intracerebrally

injected adult mice rabbits hamsters and guinea pigs and at the same time antigenic for dogs and cattle. To date far more work has been done with the Flury strain than with the Kelev strain.

These new developments may lead to wider application of such vaccines in rabies prophylaxis. It is emphasized however that only certain strains of rabies virus cultivated in the chicken embryo can be considered immunogenic and safe for vaccination.

At present, chicken-embryo vaccines are not recommended for human treatment.

The problem of the removal of the paralysis producing factor from nervous tissue vaccines has not yet been solved and research on this subject should be encouraged.

The report stresses the importance of carrying out adequate potency tests on nervous tissue vaccines recommending the desirability of continuing quantitative evaluation of potency of all batches of vaccine produced in any laboratory. Some test should be carried out on every batch of vaccine and laboratories unable to do the quantitative tests should employ the "modified Habel test" for routine testing; a more complete quantitative test should however be performed as a check every six months or at least once a year.

Every batch of chicken-embryo vaccine should be submitted to the guinea pig

Wld. Hlth. Org. Wkly. Rep. Ser. 1954 No. 26 pages. Price 1/9 \$0.25 Sw. f. 1.— Published in English and in French.

virus by the well tried method of monkey inoculation will continue to serve essentially the same purpose as the new technique. The report therefore includes technical appendices giving precise details of the more familiar techniques: the tissue culture method is not described in detail because standard procedures cannot be laid down at the present stage of rapid progress. However, a bibliography is provided which indicates where further information may be found.

There is still great need for a rapid serological test that might assist laboratory diagnosis in the first few days of illness. Progress in the development of a complement fixation test is encouraging but the practical stage has not yet been reached.

Control measures

Standard methods for the control of infectious diseases have been of little avail in poliomyelitis. One of the reasons for the apparent failure of isolation and quarantine measures to check the spread of infection may lie in the fact that for every case of paralysis there may be many of mild or inapparent infection. Cases considered to be poliomyelitis should be notified, paralytic and non-paralytic forms being recorded separately.

Virological studies of certain communities have shown that the virus is found mainly in the intimate associates of the paralytic case. It appears possible, therefore, that some reduction in the number of cases of poliomyelitis might be achieved by vigorous quarantine and hygienic measures directed at the first recognized cases. It is difficult to make a firm recommendation as to the length of time a patient should be isolated because it is not known when the individual case becomes free from infection. However, there would seem to be some value in the practice of isolating cases and quarantining contacts for three weeks. Under conditions in which

the virus may spread readily, such as in nursery schools and residential nurseries it may also be desirable to exclude convalescent poliomyelitis cases for several weeks.

It is probable that during epidemics the incidence of paralytic cases can be reduced if efforts are made to avoid conditions known to predispose to, or precipitate paralysis—e.g., overexertion, tonsillectomy, and the administration of intramuscular injections of adsorbed combined diphtheria pertussis vaccine and of heavy metals, such as arsenic, mercury, and bismuth. Further, all febrile illnesses occurring at times of endemic poliomyelitis should be treated with caution.

At the present time, more hope for the control of poliomyelitis is being placed in the development of methods of immunization than in quarantine measures. Experiments in primates have shown that paralysis can be prevented passively by the inoculation of gamma globulin. It appears from these experiments that low levels of circulating antibody serve to protect against infection by oral administration of virus. Limited success has been achieved with gamma globulin in the USA, where it has been widely used in an attempt to control the incidence of paralysis. Gamma globulin is in very short supply in almost all countries and should therefore be administered only to selected groups. Even so, very considerable wastage is inevitable since such a small proportion of exposed persons develops paralysis. However, its use is recommended for close contacts of cases, contacts in hospital wards and nursing schools, individuals entering an infected institution, newborn infants of mothers developing poliomyelitis, pregnant women exposed to infection and individuals who must submit to a tonsillectomy during a poliomyelitis epidemic.

Research is now being undertaken on a more promising method of control of poliomyelitis by active immunization or vaccination. Attempts are being made to discover

vampire bats continue to be a source of rabies infection in Mexico Central America and South America though progress has been realized through eradication schemes which employ dynamiting gassing and shooting of vampire bats in their diurnal resting places Recently rabid insectivorous bats have attacked man in the States of Florida and Pennsylvania USA and this finding introduces a new and disturbing factor into the epizootiology of rabies

It is recommended that animals bitten by animals known to be rabid be immediately destroyed However certain alternatives are suggested for cases in which the owners are unwilling to destroy exposed animals Also suggested are specific measures to be enforced by countries to prevent the importation of rabies through the passage of animals from one country to another

Diagnosis

"The attack against an infectious disease like rabies must necessarily begin with adequate facilities for detecting and measuring the problem as quickly and accurately as possible" The report calls attention to the importance of rapid, accurate and economical laboratory procedures It stresses particularly the necessity for performing animal inoculation tests for the isolation of virus from suspected brain tissue in Negri negative specimens Surveys of large numbers of specimens submitted for diagnosis showed that 10% 15% of the cases proved positive by mouse inoculation had been missed by direct microscopic examination for Negri bodies The mouse inoculation test has been given wider applicability in recent years than was possible formerly thanks to the use of antibiotics which suppress contaminating bacteria without destroying the virus present in decomposed tissue specimens Antibiotics have also made it possible to confirm ante

mortem diagnosis of human rabies by isolation of virus from saliva

Laboratory techniques in rabies are described in detail in a monograph soon to be published by WHO²

Field trials of chicken-embryo vaccine in dogs

In an annex to the report are presented the results of WHO sponsored field trials and demonstrations of rabies-control programmes based upon mass vaccination of dogs with chicken-embryo vaccine

The first such trial was undertaken in Israel where in 1949 194 cases of rabies in animals had been reported From October 1950 to June 1953 30 000 dogs were vaccinated with chicken-embryo vaccine The reduction in incidence of rabies as a result of this vaccination campaign was impressive in spite of the continued prevalence of the disease in neighbouring countries only three cases of animal rabies were observed in the first six months of 1953 The report notes that "although ancillary measures such as registration of dogs good reporting adequate diagnostic facilities elimination of stray animals and destruction of wildlife were all applied during the years preceding the campaign it was not until mass vaccination of dogs was introduced that the disease was brought under control"

A systematic rabies-control programme was also carried out in Malaya where the disease had been a problem for many years and had reached epizootic proportions by the middle of 1952 Compulsory vaccination stray dog elimination and well-organized educational campaigns were all part of this effort which produced excellent results No cases of rabies in man or in animals were reported in Malaya in 1953 up to the end of October when the latest information was received

²World Health Organization (1954) *Laboratory technique in rabies*, Geneva (World Health Organization Monograph Series No. 23) (in press)

potency tests developed especially for such types of vaccine

light of these experiments This investigation is being continued

Antirabies hyperimmune serum

Accumulating experimental evidence of the efficacy of antirabies hyperimmune serum prophylaxis encourages its use in all human cases of severe exposure, or even in cases other than those involving severe exposure, depending on the circumstances. Antirabies serum treatment should be given within the shortest possible time after exposure. Under laboratory conditions, the best results are obtained only when the serum is administered within 72 hours.

Hyperimmune serum produced in horses appears to give rise to serum sickness less frequently than that produced in sheep. With all types of antisera, the patient should be tested for sensitivity before serum treatment is administered and should be desensitized "if necessary".

Serum neutralization tests on non exposed individuals

Seven laboratories in various countries have undertaken a study of the effectiveness of hyperimmune serum, with and without subsequent administration of vaccine, in normal test subjects who have not been exposed to rabies. A summary of the results to date in this WHO co-ordinated study is included in the report, and the following provisional conclusion is reached:

Although the presence of serum antibody in human beings during or after any antirabies treatment is only indirect evidence of immunity to rabies, it is still the only available experimental evaluation that can be carried out in man. For maintenance of continuous antibody over a period of time, the combined use of a dose of hyperimmune serum followed by 14 daily doses of phenolized vaccine would appear to be the best procedure in the

Post-exposure treatment of man

The specific treatment which should be given under different circumstances is outlined in a table in the report. With regard to local treatment of wounds, immediate and thorough cleansing with soap or detergent solution is recommended; this procedure to be followed by the use of strong mineral acids such as nitric acid for deep wounds which cannot be cleansed efficiently by the former means. Application of ordinary antiseptics and local or parenteral use of antibiotics have no prophylactic value against the rabies virus, though they may be used after local treatment to combat bacterial infection.

Rabies control in animals

There are three basic principles in a rabies control programme: (1) elimination of stray dogs, (2) vaccination of dogs and (3) control of wild animal vectors. The first of these is dependent upon the registration or licensing of the "canine population". The second vaccination is best accomplished by use of the chicken embryo vaccine (Flury strain) which confers excellent immunity in dogs for at least three years after a single intramuscular inoculation. In areas where this vaccine is not available or is impractical, single injections of nervous tissue vaccine may be given though the immunity is less ("good" for one year, with significant protection after three years) and the paralytic factor represents a hazard. All vaccines used for immunization should have passed an adequate potency test.

Control of wildlife vectors calls for "well organized campaigns for the reduction of excessive numbers of wild vector population". It is noted in the report that

Osteoarthritis (arthrosis)—including the spine
 Other forms of arthritis—infective and traumatic
 Gout
 Lesions of the intervertebral discs
 Non articular rheumatism (fibrositis?)—in various
 parts of the body
 "Rheumatism" unspecified

A summary of statistical studies which have been made in several countries during or since the Second World War is included in an appendix to the report. Though these studies are of limited value they give some idea of the prevalence and incidence of the rheumatic diseases. For example in a survey made of a "probability" sample of the population of the USA in 1951 the main conclusion reached was that there were about ten million persons over the age of 14 years (i.e. about one tenth of the total population over this age) who believed they were suffering from either "arthritis" or "rheumatism". It was estimated that about six million of these ten million persons had been told by a doctor that their complaints were due to one or another of these two conditions.

A study of rheumatic diseases as causes of disablement and of long and short term illnesses in relation to the social security arrangements of the metropolitan Paris area revealed that in about 10% of 50 000 disabled persons the cause of the disablement was a rheumatic disease. 40% of these 5 000 persons being disabled by the cardiac sequelae of rheumatic fever. About 6% of 50 000 cases of long term illness (i.e. longer than six months but less than three years) were also attributed to rheumatic diseases excluding cardiopathies due to rheumatic fever.

In Sweden an inquiry made in 1943 showed that during the year 2.5 per 1 000 of the population had sought medical care for rheumatoid arthritis, 1.7 per 1 000 for osteoarthritis and 4.0 per 1 000 for sciatica and fibrositis. The data also revealed that the total number of sufferers from rheumatic diseases (including rheumatic fever) that had received medical care was about 90 000.

During the year approximately 2 100 hospital beds were occupied by rheumatic patients but it was estimated that the total number of beds needed for treatment of such patients was about 5 000 or at least 7 per 10 000 of the population.

No definite conclusions about the etiology and pathogenesis of rheumatic diseases can be drawn from the studies made thus far. However certain generalities emerge concerning age and sex incidence. In rheumatoid arthritis there is a higher incidence in the middle age groups of the female sex than in the male. There are also differences in the sex incidence of osteoarthritis in which incidence appears to rise steadily with age and some studies indicate that among men laborious occupations are associated with an earlier onset of some chronic diseases with rheumatic features (e.g. lesions of the intervertebral disc) than is the case among the general population.

Prevention, control, and treatment

Specific preventive measures against the rheumatic diseases are as yet not feasible except possibly against rheumatic fever in which the streptococcal infection is probably an etiological factor which might be countered by the use of antibiotics and of sulfonamides.

Early recognition and prompt treatment are very important. Treatment methods are largely empirical but may nevertheless yield good results. The most commonly used methods are general medical measures including the administration of special drugs such as gold, physiotherapy and orthopaedic techniques including splinting, manipulation and operative procedures. The report states that the use of active steroid and other hormones which has recently been tried can be of value in carefully selected cases but must be considered as still largely in the experimental stage.

RHEUMATIC DISEASES

Chronic rheumatic diseases have been somewhat neglected from both a medical and a research viewpoint despite their social and economic significance as causes of long term disability. At present there is lack of knowledge concerning the etiology of this group of diseases and treatment is therefore still largely palliative and prevention impossible.

A review from a public health standpoint of the chronic rheumatic diseases of articular and non articular types is presented in a recent Technical Report prepared by a WHO expert committee on this subject¹. It is noted in the report that as an international health problem, the rheumatic diseases must of necessity be considered less important in some countries than illnesses of an infective or parasitic nature which are amenable to specific measures of control.

Nomenclature and classification

Both a nomenclature and a classification are needed for the group of diseases termed 'rheumatic'. The task of formulating a nomenclature has been undertaken by a special committee of the International League against Rheumatism. As for a classification any which might be made would have to be considered provisional since there are as yet too many unknowns in the etiology and pathogenesis of rheumatic diseases.

The following general statement is made in the report:

"Rheumatic diseases affect the locomotor system in which they are important causes of pain, dysfunction and anatomical change. The most important link between them is now considered to be that they are all diseases peculiar to the connective tissue and that as such, they all show reactions peculiar to this

tissue and especially of its collagen element. It should be emphasized that although the etiology of the different rheumatic diseases is probably extremely diverse these connective tissue reactions are common to all of them. In this connexion it should be noted that not only connective tissue of the locomotor system but also to some extent that of the viscera, the nervous system, the haematopoietic system, the skin etc. may be affected by these diseases."

In an appendix to the report is a list of the diseases commonly accepted as rheumatic and of other diseases presenting rheumatic features.

Incidence and prevalence

Existing data on the incidence and prevalence of chronic rheumatic diseases are not adequate for any of the purposes for which morbidity statistics are commonly used. Four methods have been used to obtain such data as do exist: notification; analysis of medical sickness records (such as health insurance forms); analysis of hospital records and sickness surveys. Of these four only the last is considered likely to yield data which would enable statisticians to make satisfactory studies of the chronic rheumatic diseases. To be really useful, such surveys would require considerable medical and technical organization, and the home visiting would have to be done by doctors with special training and interest in the rheumatic diseases and with facilities available for making and checking diagnoses.

Uniformity in diagnostic headings would aid in making the data from such surveys comparable from country to country and for this purpose the following are suggested in the report:

Rheumatic fever

Rheumatoid arthritis (and allied conditions such as ankylosing spondylitis, Still's disease etc.)

¹ *Wld Hlth Org techn Rep Ser* 1954 78 25 pages Price 1/9 \$0.25 or Sw fr 1.— Published in English and in French

the 71 calories available from the total oxidation of 1 g of alcohol approximately 26 are liberated during the first stages of oxidation to acetate the remainder should be available for muscular energy The calories provided by alcohol should therefore be included in the tabulation of energy value of diets using the value of 71 calories per gram of alcohol However in evaluating the average diet of a population account must be taken of the fact that the consumption of alcohol is distributed in a very irregular fashion in some countries for example as much as 37% of the alcohol consumption is accounted for by 2% of the population Thus while it is recommended that in analysing the composition of diets the amount of alcohol should be placed side by side with protein carbohydrate and fat attention in any nutritional survey must be paid to the distribution of alcohol consumption throughout the population under study It should be noted too that since alcohol consumption is generally compensated by a decreased intake of calories from other sources there is a danger that the habitual use of large amounts of alcohol may lead to deficiency diseases caused by a low intake of protective food stuffs

Position of alcohol as a drug

It is concluded in the report that alcohol can be classified neither as an addiction producing nor as a habit forming drug but that it must be placed in a category of its own intermediate between these two groups In sum

"Alcohol must be considered a drug whose pharmacological action is intermediate in kind and degree between addiction-producing and habit forming drugs, so that compulsive craving and dependence can develop in those individuals whose make up leads them to seek and find an escape in alcohol. With this substance the personal make-up is the determining factor but the pharmacological action plays a significant role Damage to the individual

may develop but does so in only a minority of users The social damage that arises extends however beyond these individuals themselves"

Tolerance to alcohol

It is necessary to make a distinction between the use of the term "tolerance" in connexion with addiction producing drugs of the morphine type and that required for consideration of the problems associated with the use of alcoholic beverages Tolerance to alcohol is defined as "the capacity of the organism to function with alcohol in the blood without measurable deterioration in nervous function" Experiments upon animals and man have shown that it is possible to measure this tolerance in terms of the concentration of alcohol in the blood at which a demonstrable effect on the performance of a given test of nervous function first becomes apparent this "threshold" of alcohol concentration in the blood is characteristic of the individual and of the particular test employed

To produce the same effects a higher blood alcohol level is required in habitual heavy drinkers than in moderate drinkers and abstainers The change in resistance to the drug which results from habitual intake is termed "acquired increase of tolerance" that it is actually acquired has been demonstrated by its disappearance after a period of abstinence It is emphasized that the acquired increase of tolerance to alcohol is of a lower order of magnitude than the corresponding phenomenon which may occur with addiction producing drugs of the morphine type

Very little is known about the underlying mechanism of acquired increase of tolerance to alcohol in the habituated organism It is suggested in the report that research should be undertaken to determine the factors involved, and that such research might be greatly facilitated if it were possible to adopt

It is essential that adequate treatment facilities and hospital beds be made available for patients suffering from rheumatic diseases, that general practitioners be better informed concerning the management of rheumatic cases, that the services of specialists in these diseases be at the disposal of patients and of general practitioners and that research on the rheumatic diseases be encouraged. Attention

must also be given to limitation of disability through patient education as well as therapeutic measures, to rehabilitation of those disabled by rheumatic diseases, and to health education of the public, which is needed to correct the erroneous belief that these diseases are incurable, practically untreatable and usually disabling.

ALCOHOL AS A DRUG

Alcoholism as a psychiatric and social problem has been the subject of two WHO Technical Reports, prepared by the Alcoholism Subcommittee of the Expert Committee on Mental Health¹. A related subject, alcohol as a drug, is dealt with in a new report, which summarizes the discussions of the Expert Committee on Alcohol². This addition to WHO literature on a serious public health problem is concerned with the physiological, pharmacological and biochemical properties of alcohol and with its effects on the human organism.

Metabolism of alcohol

One section of the report is devoted to the metabolism of alcohol, considered largely from the viewpoint of the results of excessive intake as observed among alcoholics. A regular daily consumption of 400 g, or even more, of alcohol has been reported, and this raises the problem of whether present knowledge of the metabolism of alcohol is capable of furnishing a reasonable explanation of the disposal of such an amount.

A small percentage of alcohol is directly excreted by the kidneys, lungs and sweat glands, but the major portion undergoes

oxidation, principally in the liver. Whether or not the rate of oxidation is greatly increased in conditions of excessive intake of alcohol is a question which requires further study. Experiments carried out thus far have shown that while a certain degree of dependence of the oxidation rate upon blood alcohol concentration probably exists, it is not very marked within the range of blood alcohol levels up to 0.2%. The average rate of disposal of alcohol, as determined by study of blood alcohol curves, is generally stated to be not much greater than 100 mg/kg of body weight/hour, though disposal rates of about double this amount have been recorded.

It is possible that some part of large amounts of alcohol may undergo partial oxidation and that the acetate resulting therefrom may enter into synthetic reactions leading to the formation of deposits of fat. The disappearance from the body of some part of the ingested alcohol may be accounted for by absorption into food material present in the stomach. Investigation of such possibilities might lead to explanations of some of the unknown factors concerning the metabolic processes involved when excessive amounts of alcohol are ingested.

Alcohol consumption as an element in nutrition is also considered in the report. Of

¹ *Wld Hlth Org techn Rep Ser* 1951 42, 1952, 48.

² *Wld Hlth Org techn Rep Ser* 1954 84, 16 pages. Price 1/9 \$0.25 or Sw fr 1.— Published in English and in French.

ments in environmental sanitation go apace with general economic and social development and in areas which are considered less advanced "the prime need is for some organized movement to stimulate initial action"

There is ample evidence of the relationship of proper sanitation to health. It has been shown for instance that the death rate among infants in the age group 1-4 years may be from 30 to 40 times higher in countries with unsatisfactory sanitary conditions than in countries with good environmental sanitation². Amelioration of sanitary conditions results in reduced incidence of diseases transmitted by living vectors or associated with contaminated water or lack of facilities for excreta disposal.

Attention is called in the report to the economic benefits that may accrue from sanitary improvements. For example

- 1 The provision of organized sanitary facilities such as water supply leads to a considerable saving of time and labour which should become available for productive work in the rural economy

- 2 Improvements in environmental sanitation contribute to an increase in the normal expectation of life which means that a larger proportion of the population is in the productive age groups

- 3 The reduced incidence of disease which results from improved sanitation in turn reduces the costs involved in the treatment of disease and in the man-days lost through illness

- 4 Successful control of diseases such as malaria which are dependent on environmental factors increases the manpower available for agriculture and therefore contributes to increased production of food

The report describes present sanitary conditions in underdeveloped countries in many

of which more than 80% of the people live in rural areas and small communities. Among the common conditions which constitute serious health hazards are inadequate and contaminated water supplies, lack of facilities for the proper disposal of excreta, garbage and other refuse with accompanying opportunities for fly breeding and rodent infestation, inadequate housing and overcrowding and diseases of animals communicable to man. The basic steps in improving the environment are provision of adequate supplies of safe drinking water and of facilities for the safe disposal of human excreta. Next in line would be the control of the insect and animal vectors of disease where they are a serious health problem.

The administrative organization of rural sanitation programmes, basic principles of good design in sanitary facilities and equipment, personnel requirements for sanitation work and the training of such personnel, laboratory services necessary for sanitary improvements and research investigations and technical developments are all considered in the report. The need for studies of the following types is stressed

- "(a) Basic research in the development of new methods of excreta disposal and of composting by non traditional means in the biology and physiology of insects with a view to the more rational development and use of insecticides in food preservation and storage in non traditional methods for the disinfection of water on the influence of housing and industry on human physiology and in the development of new methods of obtaining water such as cloud seeding, the electro dialysis of brackish water and the distillation of saline water through the use of solar energy or of conventional power sources

- (b) Investigation into the availability and distribution of material resources, the appraisal of local sanitation problems in an attempt to find logical and economical solutions utilizing, as far as possible, local resources, investigation of non traditional building materials

- (c) The development of new uses for sanitary wastes, particularly in the fields of agriculture and fisheries, the development of field tests for the control

²United Nations, Department of Economic Affairs (1952) *Demographic yearbook 1952* New York

standard tests which would enable the results obtained by different workers to be compared

Alcohol and road accidents

A definite answer to the question as to whether or not alcohol is the cause of a road accident can seldom if ever, be given. Means are needed to make possible a decision concerning the extent to which the driving abilities of the person involved were definitely impaired because of his consumption of alcohol.

On the basis of laboratory investigations made in recent years, the results of statistically designed practical tests on drivers, air pilots, etc. and the statistical evidence from the few adequate studies existing on alcohol and road accidents it may be inferred that "at a blood alcohol concentration of about 0.05% a statistically significant impairment of performance is observed in more than half the cases examined. Compared to the tests used in experimental studies such as those upon which this statement is based the

ordinary clinical tests used in forensic practice are rather crude and may lead to faulty conclusions as to the condition of the person examined. Clinical methods cannot be relied on as the only means of deciding whether a person is under the influence of alcohol. Certain chemical methods have greater validity, particularly the method of Widmark for the micro determination of alcohol in the blood. Less reliable is the determination of alcohol in the breath, though this method, when carried out with appropriate precautions, may provide an acceptable substitute if blood alcohol determinations cannot be made. Determination of alcohol in the urine is of limited value and should be used only as a supplement to blood alcohol determination.

The widespread consumption of alcoholic beverages and the increasing complexity of traffic make it necessary to find an acceptable solution to the problem of alcohol and traffic. This solution will have to be reached on a national level since attitudes towards alcohol, intensity of road traffic, and other relevant factors differ widely from country to country.

SANITATION IN RURAL AREAS AND SMALL COMMUNITIES¹

The third report of the WHO Expert Committee on Environmental Sanitation² is concerned chiefly with the problems of sanitation in rural areas and small communities. Environmental sanitation is interpreted in this report as "the control of all those factors in man's physical environment that exercise, or may exercise, a deleterious effect on his physical, mental, or social well-being. The terms 'rural areas and small communities' refer to areas where agriculture is

the chief or even the sole industry, and where there is a lack of diversity of skill and of organized community services, or to areas where the dwellings are scattered or are in small groups, which dispersion creates difficulty in the provision of organized community services such as water supply, excreta disposal, control of vectors of disease and similar services at a cost suited to the economic level of the persons concerned.

It is emphasized in the report that although sanitation problems differ widely from place to place, the basic needs are the same "in all areas and among all peoples. Improve

For further information on this subject see *Ch on Wld Hlth Org* 1954 8 13

¹ *Wld Hlth Org techn Rep Ser* 1954 77 25 pages Price 1/9 \$0.25 or Sw fr 1.— Published in English and in French

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³United Nations, Department of Economic Affairs (1957) *Demographic yearbook 1952*, New York

of field operations the adaptation of techniques apparatus and equipment to suit local conditions

(d) An accurate method of appraisal of the social economic and physical effects of environmental sanitation in a controlled area. Although the beneficial effects of environmental sanitation are usually obvious a quantitative measure of these effects would be valuable

Political sociological, racial, and religious factors often present 'a serious obstacle to any form of organization of community health services', particularly in less advanced

areas. For this reason health education must be an essential part of any programme to improve environmental sanitation. As pointed out in the report,

In the final analysis a satisfactory environment for the peoples in underdeveloped rural areas will, to a large extent depend upon the understanding, attitude and action of the people themselves. This is especially true with regard to water supplies and excreta disposal. In reality it is unlikely in most of these areas that outside assistance can provide more than guidance technical aid, and perhaps arrangements for some material resources."

Review of WHO Publications

A BASIC WORK ON PLAGUE

Plague is a disease which is regressing but which has not been completely eradicated. It still persists in an endemic state in many parts of the world. Moreover, the steppes, prairies, and forests of Africa, America, and Asia shelter more than two hundred species of wild rodents liable to infection which may harbour fleas bearing the plague bacillus. This potential source of infection the extent of which is difficult to evaluate represents a threat which cannot be eliminated in the near future. Plague thus remains a matter of concern for the health services of many countries.

A recent WHO monograph entitled *Plague*¹ reveals the extent of the problem at the present time and the means available today to limit its seriousness. The author, Dr R. Pollitzer, has devoted a major part of his career to the study and control of plague. He has brought together in this volume which is both scholarly and practical, the essential scientific knowledge on the subject

and the fruits of his own experience in the field as well as in the laboratory. Clinicians, biologists, public health workers and epidemiologists will find this monograph a practical guide and a source of information unique in modern literature on the subject of plague.

After a chapter on the history of plague pandemics and on the present distribution of the disease throughout the world, the author considers in nine chapters the relevant scientific accomplishments of the 20th century, particularly the recent methods for the treatment and control of this disease which has been the terror of mankind since the dawn of history. The plague bacillus—its morphological and biological variations, the immunology of plague—the virulence of the bacillus the antigenic fractions, the mechanism of immunization, vaccines, serums and phages the pathology of the disease—in the experimental animal and in man, methods of laboratory diagnosis, the hosts of the infection—domestic and wild rodents the vectors—fleas and other arthropods clinical aspects of human plague, bubonic and pneumonic—including the therapeutic role of

¹ Pollitzer R. (1954) *Plague*. Geneva (World Health Organization Monograph Series No. 22). 698 pages, bibliographies, 79 illustrations (including 40 original drawings, 2 folding maps and 2 coloured plates). Price: £3 5s, \$10.00 or Sw fr 40—(clothbound) or £3 3s 0d or Sw fr 36—(paperbound).

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the end of each chapter Numerous illustrations most of them never before published—such as those which accompany the key for identifying the species of fleas most important in the transmission of plague—add to the interest of this volume which may become the authoritative work on its subject

MORTALITY FROM TRANSPORT ACCIDENTS

"It is common knowledge that the traffic problem is becoming very acute in all countries by reason of the rapid multiplication of means of transport and the need to establish regulations and conditions which will help to reduce the public health risk" Although transport accidents are not as significant a cause of death in most countries as are cancer heart disease tuberculosis or the infectious diseases as a whole they are among "the most important causes of death at certain ages" These statements are substantiated by statistical data from 15 countries that have recently been published in the *WHO Epidemiological and Vital Statistics Report*¹

Mortality statistics for 22 types of transport accident are presented under six main headings (1) railway accidents (2) motor vehicle traffic accidents (including collisions with trains pedestrians cyclists and motor cyclists and accidents without collisions etc) (3) motor vehicle non traffic accidents (4) other road vehicle accidents (5) water transport accidents and (6) aircraft accidents The deaths are classified according to sex and to age

A comparison between the death rate from transport accidents and that from diseases and other causes of death shows that in a number of countries the former

ranks with tuberculosis as a cause of death especially among men The number of deaths from transport accidents increases with age as is the case for other causes of death men are more often victims than women

Most striking is the fact that among the young accidents are one of the more significant causes of death as table I indicates

TABLE I PERCENTAGE BY SEX OF GENERAL MORTALITY IN CERTAIN AGE GROUPS REPRESENTED BY DEATHS CAUSED BY TRANSPORT ACCIDENTS

Country	Males, 15-24 years	Females, 5-14 years
New Zealand	43.2	10.1
Canada	34.2	18.0
U.S.A.	34.1	11.7
South Africa (Europeans)	30.8	7.1
Denmark	29.7	16.5
England and Wales	27.7	9.5
Germany Federal Republic	23.1	14.7
Switzerland	21.1	9.3
Netherlands	19.7	17.1
Scotland	16.9	14.9
Italy	12.3	4.2

Motor vehicle accidents rank first as causes of death with railway accidents road accidents caused by non motor vehicles

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water transport accidents, and aircraft accidents next, in that order. Victims of railway accidents are mostly men of mature years and are often railroad workers. Water transport accidents also take more victims among men than among women, fishing and sports being responsible for most of the deaths. In Denmark, out of 100 men in the age group 15-24 who were killed in transport accidents 28.4% died at sea, the percentage for the age group 25-44 was 21.7.

Of 100 victims of transport accidents, an average of 70 men are killed by motor vehicles, for women, the percentage is 77. In some countries, the proportion has reached as high as 81.1% for men (Australia) and 90.4% for women (USA). Children and adolescents show the highest percentages of deaths caused by motor cars, about 78% for boys, and about 82% for girls. Some examples of the proportion of all transport deaths represented by those caused by motor vehicle traffic accidents, among boys are: England and Wales (boys under 5) 92.4%, Finland (age group 5-14), 91.9%, Switzerland (age group 5-14), 91.7%, Australia (age group 15-24) 88.2%. The percentage for females in some countries and in certain age groups even reaches 100—e.g. in South Africa (European population), Finland and Ireland for girls under 5 years, in Ireland for women over 75, in New Zealand for women in the age group 65-74 and in Scotland for girls from 5 to 14 years.

Pedestrians are the chief victims of the motor car children and old people being the most affected. Table II illustrates this point.

A comparative study of mortality from various causes among children under five years of age has shown that in some countries motor cars kill more children than do diseases such as measles, meningitis, diphtheria, and whooping cough.

Next to pedestrians, cyclists are most frequently the victims of motor car accidents.

TABLE II PERCENTAGE OF DEATHS AMONG PEDESTRIANS AT CERTAIN AGES COMPARED WITH ALL DEATHS CAUSED BY MOTOR VEHICLE ACCIDENTS

Country	Males		Females	
	under 5 years	75 years and over	under 5 years	75 years and over
Japan	92.9	91.7	85.7	90.9
Ireland	85.7	90.9	66.7	100.0
Italy	88.1	94.8	83.3	9.5
England and Wales	92.7	85.8	90.0	90.7
Scotland	97.6	88.9	88.9	65.7

In Denmark, for example out of 100 boys aged 5 to 14 who died in traffic accidents 59 were cyclists, for girls in the age group 15-24, the proportion was 73. Accidents involving young motor cyclists also take a considerable toll of all deaths among males aged 15-24 years that were caused by motor accidents, the percentage of motor-cyclists in England was 64 in Denmark 63 in Australia, 56, and in Switzerland, 55.

A final table in the report gives the mortality from certain categories of transport accidents in selected countries in the latest year for which statistics are available. The total deaths from transport accidents, for all ages per 100,000 population of each category are as follows:

	Total	Males	Females
Australia 1951	29.9	49.2	10.1
Canada 1952	25.4	39.6	10.9
USA 1949	25.2	39.9	10.7
Switzerland 1951	20.2	33.9	7.1
South Africa 1950 (European population)	20.1	33.4	6.7
Germany Federal Republic 1951	19.3	33.2	7.1
New Zealand 1952	18.1	30.5	5.6
Denmark 1951	15.1	24.5	5.9
Scotland, 1951	13.4	22.2	5.4
England and Wales 1951	12.8	20.7	5.5
Netherlands 1952	12.7	20.7	4.8
Italy 1951	12.2	20.8	3.9
Finland 1952	11.8	19.1	5.2
Japan 1951	9.5	14.9	4.2

COMPARATIVE STUDY SMALLPOX VACCINATION

A comparative study of the legislation on smallpox vaccination in 50 countries has recently been published in the *International Digest of Health Legislation*¹

Studies on the incidence of smallpox in the world today show that on the one hand, there are endemic regions in Asia Africa and America while on the other hand there are countries from which the disease has practically disappeared. Smallpox can now ever be spread rapidly from these endemic regions to areas that are free from it and a number of foci have in fact been introduced into several European countries during the past few years.

The measures taken by different countries against this disease also take two main forms. certain countries tend to rely on the effectiveness of their public health service to protect them against the introduction of smallpox and seem more and more inclined to dispense with compulsory vaccination other countries however continue to insist upon the compulsory vaccination of their population.

Owing to scientific social and economic factors vaccinal legislation has been considerably modified in many countries. Among the scientific factors are advances in knowledge of the duration of the immunity conferred by vaccination and of the risk of post vaccinal complications and the introduction of new techniques of vaccination.

The study published in the *Digest* shows that at present most countries have compulsory vaccination laws though the enforcement regulations vary from one country to

another. The differences in legislative texts have been analysed under the following headings: compulsory vaccination primary vaccination revaccination emergency vaccination group vaccination vaccination as a prerequisite for admission to school post vaccinal inspection grounds for exemption vaccinators technique of vaccination and vaccination registers. There are also two appendices: the first gives in the form of a synopsis table an outline of the principal sections of the study the second summarizes the techniques of vaccination in use in certain countries.

Even in the few countries where vaccination is no longer systematically enforced there are restrictive clauses which make it indirectly compulsory. When for example there is a risk of infection vaccination may be made compulsory for the household or other contacts of a person suffering from smallpox. Conscientious objection to vaccination is not always allowed in two countries conscientious objection is sustained only if the objector has sufficient intelligence and knowledge to form an opinion on the matter.

The age prescribed for primary vaccination is usually within 12 months following birth rarely later. Some countries no longer require persons to be revaccinated despite the limited duration of the immunity which vaccination affords others however require persons to be revaccinated at frequent intervals sometimes every four or even every three years. When an outbreak of smallpox occurs vaccination is generally imposed on certain specified groups or on the population as a whole however provision is made for exemption if vaccination has been performed

¹ *Int. Dig. Health Leg.* 1954, 5, no. 1. This study will also appear as an *Abstract*. Price 1/6 \$0.50 5/- f 2/-

within a stipulated period the duration of which varies from country to country

In many countries vaccination is compulsory for certain groups of the population. Such groups include the medical and auxiliary medical professions. Experience in recent years shows that these groups are especially exposed to infection, and, in view of the risk they run, the annual revaccination of members of such professions has been recommended. In certain countries legislation makes vaccination compulsory for members of the public health services or for public servants (e.g., customs officials, police men, postmen, railway workers, etc.). Vaccination is sometimes also prescribed for the inmates of hospitals for the chronic sick, of mental homes, of leper asylums, and the like.

Vaccination is a prerequisite for the admission of a child to school in many countries. This is the case, for instance, in several states of the United States.

Exemption from vaccination is usually

granted on medical grounds, the nature of such grounds is sometimes left to the discretion of physicians, sometimes specified in the law.

Vaccination is usually performed by a physician, but, in a number of countries, certain categories of auxiliary medical workers and sometimes even lay persons are authorized to perform vaccination during epidemics or because of a shortage of medical staff. Post-vaccinal results are usually inspected by physicians. The timetable for such inspections varies according to the country, as to the interval specified, some legislative texts now take into account accelerated or vaccinal reactions and the normal vaccinal reactions.

The technique of vaccination is rarely specified in legislation. In some countries the scarification method is prescribed though there may be certain variations in the technique. In recent years the so-called "multiple pressure" method has also been introduced in a number of countries.

Monograph on Milk Pasteurization

This is the sort of thing that the World Health Organization and allied bodies do well. With the status that they have and the machinery and resources at their disposal they can ensure, with certain limitations, a world wide sharing of the best available knowledge on matters important to the common welfare. Pasteurization is a good example of such a matter. Kay and his colleagues point out that no human activity can ever be above the risk of occasional error, but experience has shown that pasteurization is a reliable shield and safeguard for all milk consumers if to adequate planning at the outset are added sound modern plant and equipment, skilled and conscientious management and thorough laboratory control, regularly exercised from the farm to the ultimate consumer. The monograph shows how this can be done. The rest is the responsibility of governments and others on the spot. —Review in *The Medical Journal of Australia* (1953, 2, 15, 573) of *Milk Pasteurization* by Kay et al.

CORRIGENDUM

1954 Vol. 8, No. 1 (January) p. 6 footnote 1

Delete the World Health Organization Technical Report Series

Insert a forthcoming number of the *Chronicle* *

See page 129 of this number of the *Chronicle*

Notes and News

Executive Board Thirteenth Session

The Executive Board held its thirteenth session in Geneva, from 12 January to 2 February 1954. Dr Melville D. Mackenzie (designated by the United Kingdom) was Chairman, other officers were Ambassador F. Hurtado (Cuba) and Dr F. S. Maclean (New Zealand) Vice-Chairmen and Dr H. van Zile Hyde (USA) and Dr S. Hayek (Lebanon) Rapporteurs.

Among the more important items on the Board's very heavy agenda was a detailed review of the programme and budget of the Organization for 1955. The Director-General requested a regular budget of \$10 300 000 which represented an increase of \$1 800 000 over that of the previous year. He explained that one of the reasons for this increase was to compensate for the shortfall in Technical Assistance funds. He proposed that three-quarters of the additional amount requested be used for field operations, including \$600 000 for continuing joint UNICEF/WHO projects, \$500 000 for fellowships and \$200 000 for other projects.

The proposed programme follows the same lines as that of previous years except that greater emphasis is to be placed on positive promotion of health. Occupational health is among the subjects to receive added attention. Co-operation with the ILO is to be continued, new activities have been proposed, and attention has been called to the desirability of avoiding duplication of activities in the work of the two organizations. Acting upon a suggestion of the Government of Austria, the Board recommended that a study of the possibilities of preparing international regulations for the protection of workers and the general public against roentgen and isotopic radiations be undertaken. Another study which was recommended concerns the standardization of laboratory tests of foods, it being suggested that WHO in co-operation with FAO collect and disseminate information on selected groups of chemical additives to foods.

Reports of the year's activities in the WHO Regions were presented to and noted by the Board. Two problems of regional interest particularly drew the Board's attention: the question of a permanent site for the Regional Office for Europe and the difficulties involved in holding meetings of the Regional Committee for the Eastern Mediterranean. The Regional Committee for Europe was requested to consider the former problem, at an early session if possible, taking into account recent proposals submitted by the Governments of Austria and Switzerland. The Seventh World Health Assembly was invited to study

a procedure by which the Regional Committee for the Eastern Mediterranean might meet and carry out its functions by means of the two subcommittees contemplated in a resolution of the previous Health Assembly.

In a biennial review of WHO's official relationship with non-governmental organizations the Board confirmed the maintenance of relations with 25 organizations. Three non-governmental organizations were accepted into official relations with WHO: the International Committee of Catholic Nurses and Medico-Social Workers, the Medical Women's International Association, and the Union O.S.E. (Worldwide Organization for Child Care Health, and Hygiene among Jews).

The Board examined in detail a preliminary report on programme analysis and evaluation which had been prepared by the Director-General and recommended that this study be continued and further developed. The reports of a number of expert groups were also reviewed and noted.

The Board will meet for its fourteenth session on 27 May 1954 in Geneva.

The resolutions and report of the Board will be found in *Official Records* Nos. 52 and 53.

Darling Foundation Prize to be Awarded at Health Assembly

Dr G. Robert Coatney and Professor George Macdonald will be awarded the Darling Foundation Prize and Medal by the Seventh World Health Assembly. This prize which consists of a bronze medal and a sum of 1 000 Swiss francs is given to the author or authors of original work on malaria. It is in honour of Dr S. T. Darling, who was accidentally killed during a study mission of the Malaria Commission of the League of Nations in 1925. The Foundation is now administered by WHO and the recipients of the prize are chosen by a special committee appointed by the Organization. The last award was made in 1951 to two British scientists Professor H. E. Shortt and Dr P. C. C. Garnham.¹

Dr Coatney of the Laboratory of Tropical Medicine National Institutes of Health, Bethesda Md. USA is known for his research on the therapy and prophylaxis of malaria by antimalarial drugs. Professor Macdonald, Director of the Ross Institute of Tropical Hygiene and Professor of Tropical Hygiene at the University of London, has made important contributions to knowledge concerning the epidemiology of malaria.

Eighth World Health Assembly May Be Held in Mexico

The WHO Executive Board at its thirteenth session unanimously decided to recommend to the Seventh World Health Assembly that it accept the invitation of the Government of Mexico to hold the Eighth Assembly (1955) in Mexico City

New Regional Director for Africa

On 1 February 1954 Dr F J C Cambournac former Director of the Malaria Institute in Lisbon Portugal became Regional Director for Africa. He succeeds Dr F Daubenton who has retired after many years of health work in Africa.

Dr Cambournac was born in Portugal in 1903. He studied medicine at the University of Lisbon and later specialized in tropical medicine in Lisbon London and Hamburg. He has had wide experience of health conditions in Africa: for example he has served with groups studying specific disease problems in Portuguese Guinea and in Angola. He is well known as a malaria specialist: is a member of the WHO Expert Panel on Malaria and has acted as a WHO malaria consultant in Africa. Dr Cambournac represented his Government at the International Health Conference in New York in 1946 and has been a member of the Portuguese delegation at several World Health Assemblies.

Waterworks Seminar in South East Asia

In December 1953 a two week seminar for waterworks operators was held in New Delhi India. A co-operative project of WHO and the Ministry of Health of India this seminar provided a short course in the principles and practices of water purification for about 45 waterworks superintendents from Burma Ceylon India and Indonesia. The faculty included nine State sanitary engineers from India and experts from the Netherlands WHO the Foreign Operations Administration of the USA and the Indian Ministry of Health.

In an address of welcome to the participants in the seminar Dr C Mani Director of the WHO Regional Office for South East Asia stressed the fact that lack of adequate environmental hygiene was the largest single cause of preventable disease and loss of manpower in the Region. Almost three fourths of the population he declared drink unsafe water make little effort to dispose of excreta properly prepare milk and food without regard to principles of hygiene live in unfit dwellings and are constantly exposed to insect and rodent carriers of disease.

The seminar aimed to help in improving existing water supply installations of which there is a considerable number but of which many are in a state of deterioration because of poor operating practice and lack of adequate maintenance.

World Health Day 7 April 1954

World Health Day was observed on 7 April 1954. Since this year marked the centenary of the beginning of Florence Nightingale's "pioneer work in the fields of nursing and sanitation" the theme chosen for observance was nursing and its significance for health in the modern world as embodied in the phrase "The Nurse—Pioneer of Health".

In calling the attention of Member Governments to the celebration of this day the Director General wrote:

With each passing year World Health Day is welcomed by an increasing number of national and local health authorities throughout the world as an added and valuable occasion for stimulating populations everywhere to a deeper understanding of their own health needs and health problems and for making people aware of the existing possibilities for health improvement which can be realized only with their co-operation. It is hoped that all Member Governments will observe World Health Day in 1954 both nationally and locally.

Sixth Seminar on World Health

Announcement has been made by a circular from the Director General that the World Federation of United Nations Associations (WFUNA) is organizing a Seminar on World Health to be held in Geneva during the Seventh World Health Assembly in May 1954. This is the sixth such seminar. As in previous years the participants will be through national and student associations affiliated or co-operating with WFUNA in various countries. It is hoped that governments will be willing to grant in aid to individual participants desiring to attend the seminar but unable to defray their own expenses.

The World Health Organization is not associated with the seminar in any official capacity. Regional Directors and Headquarters staff will give lectures on WHO and its activities and seminar participants will be able to attend sessions of the Assembly and to obtain information and documentation made available to them through the C. I. H. Inquiries concerning the Sixth Seminar on World Health should be addressed to the World Federation of United Nations Associations, 1 avenue de la F, Geneva, Switzerland.



CHRONICLE OF THE WORLD HEALTH ORGANIZATION

THE WORK OF WHO 1953 A REVIEW OF THE ANNUAL REPORT
OF THE DIRECTOR GENERAL

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SCHEDULE OF MEETINGS

4 May **Seventh World Health Assembly, Geneva**

On the agenda of this Health Assembly in addition to review and approval of the reports of the Executive Board (twelfth and thirteenth sessions) and of the Director General on the work of WHO in 1953 are amendments to the Constitution relative to membership of the Executive Board award of the Leon Bernard Foundation Prize presentation of the Darling Foundation medals and prizes consideration of the question of technical discussions at future Health Assemblies and the customary matters concerning programme and budget and administration finance and legal problems The topic of the technical discussions will be Public Health Problems in Rural Areas

27 May **Executive Board fourteenth session Geneva**

14-19 June **Conference on School Health Services Grenoble**

23 June **Expert Committee on the International Pharmacopoeia thirteenth session**
3 July **Geneva**

THE WORK OF WHO 1953

A Review of the Annual Report of the Director-General

The Annual Report of the Director General for 1953¹ is a realistic evaluation of some of the world's basic health problems as well as a record of a year's accomplishments. In its fifth year of existence WHO began to gain a true picture of the health needs of each of its six regions. This knowledge in turn brought about a shift in emphasis in the Organization's activities while control of "mass diseases" continued to be a major aim more attention was paid to fundamental health needs such as improvements in environmental sanitation health education of the public and above all training of health personnel. Long range planning assumed greater significance though in some regions "elasticity" in policies for the Organization's work was required to meet specific demands. Comprehensive projects with the development or improvement of health services as the ultimate goal were stressed in most of the regions even more than previously. In brief a larger view of the world's health situation became apparent in WHO's work in 1953 and this is reflected in the Annual Report.

THE REGIONS

Africa

Africa is a continent in transition vast and heterogeneous inhabited by hundreds of different population groups varying in civilizations customs and ideals and living in different climates and under different economic conditions. In attempting to aid in improving health on this continent WHO has to be fully cognizant of this vastness and variety and of their implications in adapting approach and practice to local conditions. The Annual Report gives the following description of the Region:

Generalizations about Africa would be difficult and misleading but in most of the countries

of the Region the African village will for a long time to come remain the centre of most health problems.

The village therefore and not the nation must be recognized as the unit on which planning must be based plans must take account of the local customs and cultures of the people among whom the work is to be done and methods derived from experience in other countries must be used with caution with a mind ready to note unexpected reactions and quick to abandon or modify the assumptions on which the work was started, as local conditions and atmosphere may dictate.

Seldom can broad campaigns for the control of disease be undertaken with any prospect of general success. There is probably more promise in encouraging smaller health projects that can some day be taken over and maintained by the population itself—centres in which Africans will be taught and

¹ World Health Organization, 22 (1954) The work of WHO 1953
and the United Nations, 108 R. W. H. H. O. 11, Geneva.

and part of the D. G. G. no. 1. The World Health Organization, 1954, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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assistance in health is the strengthening of the fundamental public health services of national provincial and local governments " Efforts to aid in this "strengthening" process entail emphasis on health education of the public improvements in sanitary conditions particularly in rural areas and the training of medical and para medical personnel

The so-called "mass diseases" continue to be a problem in the Region from the standpoint of social and economic development as well as of health The control of such diseases—gastro-intestinal infections malaria tuberculosis bilharziasis yaws and ankylostomiasis—is however being undertaken within the framework of attempts to improve general conditions including nutrition and education

The Annual Report notes the progress which is being made in the Region

In the Americas there has been a definite increase of interest among governments in strengthening and expanding health services for their people The causes would be difficult to identify and evaluate but among the general factors are a substantial increase in industrialization the value of industrial production now exceeding that of agricultural production by 36 per cent and a general increased interest in public services affecting the welfare of the people Among the more specific factors are a larger number of qualified public health officers trained under programmes of international organizations governmental and non governmental and now occupying leading posts in their countries and the stimulus and assistance given by international organizations in developing health programmes

South East Asia

In South East Asia the rapid expansion of health work has been accompanied by some sacrifice of long term aims to immediate pressures " Popular demand for direct medical services has forced governments into programmes for special ends which may not be the most appropriate step in long term planning Some countries with scanty local resources are overloaded with commit

ments for such popular programmes so that the funds and manpower remaining are insufficient for founding a solid health service " A concomitant problem particularly in some of the better developed countries is a trend towards providing for curative measures at the expense of work which would be more fundamental in nature and which would eventually have more far reaching effects Under these circumstances WHO must try to encourage and support governments in resisting such tendencies and in making long range plans

WHO's role as a coordinator is especially important in South East Asia where several bilateral agencies are extremely active Close liaison with the Foreign Operations Administration (FOA) of the USA has for instance proved useful in malaria control in Nepal The presence of WHO area representatives facilitates the task of co-ordination

Among the major problems of the Region are poor environmental sanitation and shortage of trained health personnel The Organization is increasingly being asked for aid in attempts to improve sanitary conditions and it is hoped that by 1955 demonstration and training teams in environmental sanitation will be operating in all countries of the Region With regard to health personnel the serious lack of doctors nurses sanitarians and all types of auxiliary workers makes assistance to training institutions one of the principal functions of WHO In addition particular attention is given to organizing national training courses on special subjects either as specific projects or as part of the work of demonstration teams About 65 courses of this kind ranging in length from one week to one year were organized with the help of WHO in 1953

In considering the future work in South East Asia the Annual Report states

it is probably true to say that work in the Region is approaching the stage of getting to grips

FIG 1 TRAINING HEALTH PERSONNEL IN ETHIOPIA



At the Filoha clinic in Addis Ababa the laboratory adviser of a WHO team which is aiding in venereal disease control teaches young Ethiopian students serological techniques

trained by other Africans whenever possible and from which the new ideas will spread. Nothing will be gained by pressing the pace. Thorough study and research are necessary before attempting to introduce any plan.

"In Africa WHO in co-operation with the existing health services, some of which have many years experience, therefore has the following preparatory tasks: to find out the people's ideas about the nature and origin of diseases and the reasons for the methods they have adopted to deal with them; to persuade the people that they can receive benefit from new techniques and the discoveries of science; to teach their leaders what is economically practicable; to stimulate the training of Africans, particularly in medicine (and its relation to social and economic conditions) and sanitary engineering and in the meantime to select and train non-African doctors willing to assist in the development of the continent; to co-ordinate the health work that is going on; and to prevent the disadvantages which might follow the industrial revolution now in progress. The regional office has made a beginning in these tasks."

Guidance in these tasks is furnished by a small group of regional public health officers, a social anthropologist and a sanitary engineer. This group develops plans and advises field staff in such a way as to facilitate the approach to the people and avoid clashing with local customs and conditions. Technical advice is provided by the chiefs of sections at Geneva headquarters.

The Americas

The socio-economic and health conditions of the countries of the Americas are extremely varied, but the difficulties of adapting the general principles of public health administration to these conditions are reduced by the growing appreciation that the most important form of international

FIG 2 MALARIA CONTROL IN LEBANON



Malaria vectors are collected in a WHO-assisted control campaign in Lebanon. This cone shaped erection placed over a well traps the mosquitos as they emerge from the nymph state

projects within a few years the work may become "a growing project maintained by the government. Another type of aid which is valuable for these countries is the provision of public health advisers who can guide governments in securing a proper balance of expenditure between curative and preventive health work" and in planning essential services.

In the second group of countries "WHO can give assistance by providing fellowships and advice to governments. In those countries which already have some public health system one of the greatest needs is for the development of public health laboratories—at first centrally and later in municipalities or provinces. More attention should also be given to central statistical services including those for public health statistics."

Western Pacific

As in most of the regions one of the greatest problems in the Western Pacific is the need for personnel trained in public health. The Annual Report gives a striking statement of this need:

In one country with a population of over a million, there is only one qualified physician; in another with a population of three and a half million the personnel trained in public health is no more than six. In several of the territories practically all the public health workers are brought from elsewhere.

"In contrast to this situation, there exists in some other countries a great wastage of trained manpower. Instead of being utilized in government service many men trained in public health are compelled to enter private practice because the salaries offered by governments are so unattractive."

Because of this need for health personnel WHO assistance is given to a number of

with the more basic health needs of the countries and it is becoming necessary to provide for the greatest latitude in regional programme planning and for the possibility of making unexpected changes at short notice in order to meet changing developments and to fit [the work] into existing or projected national plans "

Europe

WHO's activities in Europe continue to take the form mainly of inter country programmes of an educational nature. These included in 1953, special studies on such a wide variety of subjects as health visitors, the effects on child development of separation from the mother, perinatal problems, and school health services, group training courses on anaesthesiology, insect control, milk quality control, industrial hygiene, public health administration, rehabilitation of handicapped children, social paediatrics, thoracic surgery, tuberculosis and venereal disease control and a number of conferences, symposia and seminars on various subjects—health education, insect control, the mental health aspects of public health practice, occupational health, preventive and social medicine, and public-health nursing.

"Within the countries themselves there is wide spread interest in strengthening national training institutions, particularly in post graduate public health training (in Austria, Greece, Italy, the Netherlands, Turkey and Yugoslavia), nurse training (in Turkey) and psychiatry (in Denmark). WHO helps with these programmes in several ways: regional health officers assist in programme planning and development; visiting lecturers are provided; fellowships are awarded to members of the teaching faculty; teaching equipment is supplied; and medical library services are strengthened."

The fellowship programme remains a cornerstone of WHO's work in Europe though because of financial difficulties there was a decline in the number awarded in 1953, particularly in those awarded from Technical Assistance funds.

In Europe as well as in other WHO regions it is beginning to be possible to take

a broader view of health problems and how they can be met. To quote from the Annual Report:

"The co-operation from Member Governments in programme planning is now extremely active and the resulting international action is beginning to come much closer to the need. The emphasis in the future should certainly be on fewer and better programmes. Of particular importance is the assistance which WHO is giving—and will increasingly be requested to give—in relating the general conclusions of a regional study conference or seminar to the needs of individual countries and to their possibilities for improving techniques. To this extent some shift in emphasis may be expected in the future towards programmes of direct assistance to countries which will maintain the most valuable elements of inter country work."

Eastern Mediterranean

Though there are certain health problems common to all the countries of the Eastern Mediterranean Region, the basic concern—development of health services—must be considered from two viewpoints since there are two distinct groups of countries: those in which there are practically speaking no health services and in which WHO must aid in laying the foundations for their establishment; and those in which services exist but are in need of improvement. To deal with both of these groups of countries requires elasticity in programme planning.

The trend in the first group, in which no real public health services have yet been formed, is towards the increasing use of WHO teams to do the initial work on projects. Though the governments may be unable to spare staff for this work, even to the extent of providing a matching national team at the outset, they usually suggest what needs to be done and may know how it should be done. For example, government resources may be inadequate for training much needed auxiliary personnel; with the help of WHO trainees can be sent abroad for study or be given instruction as part of demonstration

GENERAL REVIEW OF 1953

This year's Annual Report is a departure from those of previous years in that the detailed description of projects undertaken in operation and completed is presented in the form of a concise list giving all the essential information. The body of the Report consists of a general review of developments in each section of the Organization and in each of the WHO regions together with an evaluation of present problems and future trends. Individual projects are described only for illustrative purposes and as being representative of the type of work in progress.

Another part of the Report is devoted to co-operation with other organizations dealing with WHO's activities as a co-ordinator and with the Expanded Programme of Technical Assistance for Economic Development.

COMMUNICABLE DISEASES

Communicable diseases still present serious health and economic problems in many parts of the world particularly in the less developed areas. They cause incapacity, disability and death in all age groups but especially in children and young adults and reduce the working potential of the population.

WHO at first concentrated its attention mainly on those diseases for which mass control measures either existed or could be readily developed by applying existing knowledge. Later widespread interest in other diseases, especially virus diseases, changed the attitude of the Organization, and its function as international co-ordinator in the control of all communicable diseases became more important.

Three conclusions emerge from the experience of the past five years in research on and control of communicable diseases:

1. Certain communicable diseases such as smallpox can be controlled: all the necessary technical knowledge is available and all that is required is the organization to apply it. In the case of diseases such as typhoid, paratyphoid, dysentery and cholera, control is possible through the application of sound sanitation practices.

2. Other communicable diseases "can be brought to a level where they are no longer

major public health problems". Examples are malaria and the treponematoses. In most areas of the world the reduction in prevalence of these infections depends only upon organization and funds.

3. "Internationally co-ordinated research can sometimes obtain quicker results than national research alone."

Among the many considerations which must determine future policy and practice in communicable-disease control are (a) assessment of the work done, (b) adaptation of new control methods to mass application in the field (e.g. the use of a single injection of penicillin with aluminum monostearate for the control of the treponematoses) and (c) the development of new measures for the control of diseases for which satisfactory methods are not yet available (e.g. influenza, poliomyelitis, brucellosis, Q fever, leprosy and parasitic diseases).

WHO is at present working on a large number of communicable diseases and in the immediate future it must confine itself to the most important of the problems on which it is already engaged.



Schoolchildren in Taiwan line up for BCG vaccination in a WHO/UNICEF programme of tuberculosis control

educational institutions in the Region—e.g. to the Institute of Hygiene of the University of the Philippines in Manila to the Department of Social Medicine and Public Health of the University of Malaya in Singapore and to the Ecole d'Officiers de Santé in Phnom Penh Cambodia. In addition fellowships are awarded and seminars training courses and conferences are sponsored.

In November 1953 39 projects on different health problems were in operation in the Western Pacific Region.

With regard to present trends in the Region the Annual Report emphasizes the importance of co-ordination not only between the different relevant authorities in a

country but also between international agencies. In several countries of the Western Pacific Region, committees have proved to be an effective means of assuring co-ordination and this procedure appears well designed to make clear to all national and international bodies the long term implications of particular projects. The hope is expressed in the Report that this method of joint action will both accelerate the shift of emphasis from individual field projects to the general development of public health services and give proper weight to WHO's role as the directing and co-ordinating authority in international health work.

Government's five year plan for country wide malaria control, with which a beginning was made in 1953. Malaria control is now popular and control units can move freely even in areas where lawlessness prevails."

In addition to giving direct aid in projects of this type WHO offered training of various kinds to meet the increasing demand for assistance in strengthening national malaria control organizations emphasized the functions of demonstration teams in providing systematic practical training in malaria control and helped malaria institutes and centres for training in insect control.

It is noted in the Annual Report that 1953 may prove to be a turning point in the history of WHO's policy in malaria control in view of certain developments during the year. Recent experience in Greece has suggested that after malaria has been under control for a few years active antimalarial measures can be safely withheld provided that there are sound criteria for deciding when the measures should be discontinued and that adequate safeguards are provided. This possibility began to be given serious consideration and its implications for malaria-control policy are foreseen.

The prospect of discontinuing a residual insecticide campaign after a few years of malaria control will encourage governments to establish nation wide schemes and will perhaps induce others to provide assistance under international or bilateral schemes. Clearly the larger the area under control the safer discontinuation would be and in a control programme it is therefore technically and economically desirable to cover all malarious territories of a country and possibly those of adjacent countries. Moreover the fact that in some countries in 1953 the local malaria vectors had developed DDT resistance after several years of spraying campaigns suggests that programmes of malaria control for a country or group of countries should be planned so that the application of the insecticides could be withheld before the time when resistance might develop (never less than five years so far as has been reported). Obviously when malaria transmission has ceased, this does not imply that the anopheline vector species has been eradicated indeed the anopheles density may even be nearly as high as before control. If

subjects carrying malaria parasites come into the country the transmission may be started again but this danger would decrease in direct proportion to the number of neighbouring countries from which malaria was also eradicated. When active malaria control is interrupted it will have to be replaced by a policy of defence against the reintroduction of malaria and the prevention—or immediate suppression—of transmission. For this purpose it will be necessary to ensure the adequate and immediate notification of new cases of malaria and the decentralization of facilities for diagnosis and for epidemiological research and in case of an epidemic it may be necessary to resume the insecticide spraying (which is why the campaign should be withheld when the insecticide is still active on the vector species) and the use of chemotherapeutics. Fortunately some modern antimalarials can guarantee radical cure of the two main malaria infections in a very high percentage of cases and some others could be of the greatest assistance in the event of such an epidemic."

During the year WHO published a monograph on malaria terminology² and assisted in research on the susceptibility of anophelines to insecticides and on the sorption of insecticides on mud walls.

Treponematoses and venereal infections

WHO aid continued to be given throughout 1953 in mass treatment programmes for the control of treponemal diseases and in demonstration and training projects. By the end of the year more than 15 million persons had been examined and more than 4 million had been treated with penicillin. In some countries yaws control had reached the consolidation stage in India Indonesia and Thailand projects were progressing satisfactorily and in Bechuanaland Laos and Liberia control campaigns had been started. WHO advisers were withdrawn from bejel-control activities in Iraq but trained national personnel and a strengthened health service continued and expanded the work.

Covell, G. Russell, P. F. & Swell, J. H. (1953). *Malaria terminology*. Geneva (World Health Organization Monograph Series No. 13). Price 5 \$1.00 or Sw. f. 4.—

Malaria

At the close of the year WHO was assisting in malaria control of 21 countries. Projects had been started in Brunei, the French Cameroons and Liberia in the Terai area in India, in Viet Nam, and in Lebanon, the Governments had taken over work begun with WHO aid and were expanding malaria control efforts.

Typical of the Organization's activities in combating malaria is the help being given in Burma.

In Burma malaria is among the greatest public health problems and an obstacle to social and economic development. About seven and a half million persons, nearly 40 per cent of the population, are affected. At the request of the Government a WHO team, including a malariologist, an entomologist and a sanitarian, was sent in May 1951 to demonstrate modern methods of malaria control and to help build up and train staff for a national malaria organization.

Some months were spent in preliminary work and surveys and the district of Lashio, where the spleen rate among children was 90 per cent, the parasite rate 26 per cent and the infant parasite rate about 56 per cent, was selected for the demonstration. Work started in early October 1951.

The project has therefore been in operation for a little over two years and is being continued. The first four months were spent in epidemiological and entomological surveys; an area of 300 square miles with a population of about 53 500 was chosen for the first year's work and in the second year the area was extended to 2 600 square miles including several small towns and a population of 110 000. *Anopheles minimus* has been proved to be the vector and the main transmission season appears to be from July to December. After the first year's operations 173 blood smears of infants were examined, and not one was positive; there was a 26 per cent reduction in spleen and parasite rates and the vector species was reduced by about 90 per cent as compared with unsprayed areas.

This project, by providing training for malariologists, entomologists and malaria assistants and other auxiliaries, has stimulated and helped the



FIG. 4. MALARIA CONTROL IN CAMBODIA

Members of the WHO malaria team in Cambodia demonstrate methods of DDT spraying to the future health educators of Cambodia, Viet Nam and Laos.

Government's five year plan for country wide malaria control with which a beginning was made in 1953. Malaria control is now popular and control units can move freely even in areas where lawlessness prevails."

In addition to giving direct aid in projects of this type WHO offered training of various kinds to meet the increasing demand for assistance in strengthening national malaria control organizations emphasized the functions of demonstration teams in providing systematic practical training in malaria control and helped malaria institutes and centres for training in insect control.

It is noted in the Annual Report that 1953 may prove to be a turning point in the history of WHO's policy in malaria control in view of certain developments during the year. Recent experience in Greece has suggested that after malaria has been under control for a few years active antimalarial measures can be safely withheld provided that there are sound criteria for deciding when the measures should be discontinued and that adequate safeguards are provided. This possibility began to be given serious consideration and its implications for malaria-control policy are foreseen.

The prospect of discontinuing a residual insecticide campaign after a few years of malaria control will encourage governments to establish nation wide schemes and will perhaps induce others to provide assistance under international or bilateral schemes. Clearly the larger the area under control, the safer discontinuation would be and in a control programme it is therefore technically and economically desirable to cover all malarious territories of a country and possibly those of adjacent countries. Moreover the fact that in some countries in 1953 the local malaria vectors had developed DDT resistance after several years of spraying campaigns suggests that programmes of malaria control for a country or group of countries should be planned so that the application of the insecticides could be withheld before the time when resistance might develop (never less than five years so far as has been reported). Obviously when malaria transmission has ceased this does not imply that the anopheline vector species has been eradicated indeed the anopheles density may even be nearly as high as before control. If

subjects carrying malaria parasites come into the country the transmission may be started again but this danger would decrease in direct proportion to the number of neighbouring countries from which malaria was also eradicated. When active malaria control is interrupted, it will have to be replaced by a policy of defence against the reintroduction of malaria and the prevention—or immediate suppression—of transmission. For this purpose it will be necessary to ensure the adequate and immediate notification of new cases of malaria and the decentralization of facilities for diagnosis and for epidemiological research and in case of an epidemic it may be necessary to resume the insecticide spraying (which is why the campaign should be withheld when the insecticide is still active on the vector species) and the use of chemotherapeutics. Fortunately some modern antimalarials can guarantee radical cure of the two main malaria infections in a very high percentage of cases and some others could be of the greatest assistance in the event of such an epidemic."

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Covell, G. Russell, P. F. & SwetDengrebel, V. H. (1953) *Malaria terminology*. Geneve: (World Health Organization Monograph Series No. 15). Price 5 \$1.00 or Sw. 4.—

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FIG 4 MALARIA CONTROL IN CAMBODIA

Members of the WHO malaria team in Cambodia demonstrate methods of DDT spraying to the future health educators of Cambodia, Viet Nam and Laos.

for the control of venereal diseases have gone forward in ten countries. In two Egypt and India projects of this kind were completed the teams leaving behind them much information on the extent and nature of the venereal-disease problem a wider appreciation of modern diagnostic and therapeutic procedures cadres of trained national personnel and strengthened health services

Tuberculosis

"The primary aim in tuberculosis control is to decrease the number of healthy people who contract a tuberculous disease." This entails two lines of approach: detecting sources of infection and neutralizing or minimizing the spread of infection from them and applying measures aiming to increase resistance to tuberculosis among the healthy people of the community.

In 1953 WHO helped to start or to extend tuberculosis-control services in 24 countries mostly in the tropical or sub-tropical zones. The work consisted largely of two types of projects and was given jointly with UNICEF in carrying out 21 BCG vaccination campaigns and also with UNICEF in some instances in establishing 16 demonstration and training centres.

For revealing cases of infectious pulmonary tuberculosis the Organization has established a "standard examination" which may be used effectively on large population groups at relatively low cost and which can for the most part be applied by lay technicians. This examination consists of a tuberculin test (Mantoux 5 International Units) chest X-ray (70-mm film) and

FIG 7 TUBERCULOSIS CONTROL IN HONG KONG



A little boy from a Hong Kong orphanage receives a tuberculin injection

FIG 5 YAWS CONTROL IN INDONESIA



Examinations for yaws lesions in a WHO aided campaign against yaws

The experience in mass treatment of treponemal diseases during the past three years has resulted in improvements of techniques and consequent reduction in costs. It has been calculated that the cost per person examined in the mass campaigns has been approximately \$0.25 and per person treated with penicillin about \$1.50. These figures include expenditures for personnel, drugs, transport, administration and all other items by health services, WHO and UNICEF.

In evaluating the results of these efforts the Annual Report states that they have proved that it is possible to control treponemal disease by mass treatment. It has been demonstrated that by a carefully planned and systematically carried out project infectiousness can be completely suppressed and the incidence of the disease reduced practically to the point of eradication.

Progress has been realized too in the control of venereal infections.

Demonstration survey and training projects to assist governments to develop their programmes

FIG 6 YAWS CONTROL IN INDONESIA



Another step in the WHO team operations: blood samples are taken and penicillin injections given

CHANGING PRINCIPLES AND PRACTICES IN COMMUNICABLE DISEASE CONTROL

— The introduction of antibiotics has made control possible by treatment on a mass scale. Further investigations during the year with broad spectrum antibiotics have not essentially added to the possibilities of control.

— The insecticides with residual effect have proved their value in malaria and vector control in general and specifically in the control of typhus. Studies on resistance of vectors to insecticides and on the sorption of insecticides on mud walls have been continued.

— In tuberculosis control WHO's policy has been directed towards avoidance of the spread of infection. Mycobacterial resistance and side-effects impose caution and discrimination in the use of antibiotics. Experience this year has confirmed the limited applicability of isoniazid.

— Although the value of gamma globulin in controlling measles and infectious hepatitis is firmly established, care should be taken to avoid premature conclusions as to its usefulness on a large scale in poliomyelitis. Work on developing effective poliomyelitis vaccines is still in the experimental stage.

— In leprosy control the use of sulfones for mass treatment is under investigation. Institutional isolation is no longer considered the only effective method of control. The finding and ambulatory treatment of early cases is sounder public health practice.

— For bilharziasis, it is realized that although the newer molluscocides are promising, control by molluscocides is not sufficient in itself. Further ecological study of the snail vectors is necessary.

— The value of internationally co-ordinated research in the control of virus diseases has been proved, through it the type responsible for the 1953 outbreak of influenza was quickly recognized. It has also been essential to the delineation of yellow fever areas. Investigations of the temperature resistance of dried smallpox vaccines are being continued. The work on standardizing diagnostic methods and laboratory procedures is also continuing, and simple effective laboratory methods for application in the field are being sought.

— For the zoonoses in addition to the chick-embryo vaccine for rabies, brucellosis vaccines which seem promising are being developed and a field trial of their use in sheep and goats is under way.

(Quoted from the Annual Report of the Director-General 1953)

zoonoses—histoplasmosis toxoplasmosis
trichinosis and tularaemia

Food hygiene is receiving an increasing amount of attention in many countries. WHO sent consultants to Burma, Ceylon, Costa Rica, and India to advise on problems of meat hygiene. UNICEF, FAO and WHO

jointly sponsored a training course on the different aspects of milk processing for interested personnel in Europe where "milk is beginning to take its place as the most important standard article of diet" thanks to the eradication of disease in animals, pasteurization and improved sanitation.

examination of sputum and laryngeal swab for tubercle bacilli

In BCG vaccination also WHO is now using methods that can be applied by auxiliary personnel and that involve relatively small expense. A typical example is a campaign undertaken in India

In the BCG project in India over ten million children and young adults were tuberculin tested in 1953 and over four million non reactors to tuberculin vaccinated by about 65 teams each consisting of one doctor and six BCG technicians. The work including the tuberculin testing the reading of the tests and the vaccination was done by these technicians—lay people without medical or para medical background who have been given specific training in the technique and the organization of the work. For this project in India the total expenditure has been about US \$350 000 (three and a half cents per person tested and ten cents per person vaccinated) of which US \$50 000 or one seventh of the total came from international assistance. A check system has been established to ascertain the result of the mass vaccination in terms of degree of tuberculin allergy induced by the vaccination and complications resulting from it and this study is being carried out by a specially trained team

Other special studies are being made by the Organization through the Tuberculosis Research Office in Copenhagen and with the aid of other institutes and of WHO field teams. Consideration is also being given to the problem of obtaining internationally comparable statistics on tuberculosis the standard examination referred to above is being used towards this end

In tuberculosis control as in many other health programmes the need for a broader approach is foreseen

In the future international agencies will be concerned less with emergency measures for controlling tuberculosis and more with helping governments to develop permanent well balanced public health programmes. This broader approach must take into account some important changes in the problem in recent years. Firstly mortality from the disease has been dropping rapidly almost everywhere for reasons that are far from clear. Secondly the advent of potent new antituberculosis drugs may well lead to an entirely new approach because of the tremendous

potentialities of such drugs for rendering active cases non infectious. It is possible that public health programmes will in future be directed more to the prevention of infection than of clinical illness. Finally WHO is now assisting with programmes in countries where little is known about the frequency and possibly the special characteristics of tuberculosis. International research and international health services must respond to changing needs and new opportunities—and direct their programmes accordingly

Veterinary public health and zoonoses

WHO continued to help individual countries in the control of zoonoses and to co-ordinate research and sponsor exchange of information on this group of diseases. Particularly outstanding were developments in the control of rabies. WHO sponsored field trials of chick embryo vaccine in combating rabies in dogs in Israel and Malaya demonstrated the efficacy of this vaccine and brought the incidence of the disease in these countries to the lowest levels in the past 25 years. Important advances were also made in knowledge of the use of combinations of hyper immune serum and vaccine in the prevention of rabies in man

Epidemiological surveys on the presence of Q fever were continued in 28 countries. The Organization made a small grant to the University of Cambridge to assist in work on producing cheaper antigens for diagnosis of this disease and started co ordination of research on the natural reservoirs of the micro organism. Aid was given to Spain in efforts to control leptospirosis, which causes much disability and loss of manpower in the rice fields of the country. Problems in brucellosis and bovine and avian tuberculosis were under joint study by WHO and FAO and a report on a European conference on five of the zoonoses was published by the two organizations.³ Information was supplied to governments on various other

³ World Health Organization (1953) *Advances in the control of zoonoses*. Geneva (World Health Organization Monograph Series No. 19) also published as *FAO Agricultural Series No. 25*. Price 15/- \$3.00 or Sw fr 12.—

completed during the year "In this survey some twelve thousand samples of human blood were collected in Angola Bechuana land Belgian Congo Mozambique Northern Rhodesia Nyasaland Southern Rhodesia Tanganyika and the Union of South Africa and tested for antibodies to yellow fever virus by the Virus Research Institute at Entebbe and the South African Institute for Medical Research at Johannesburg" Campaigns against *Aedes aegypti* and other insect vectors of diseases were carried out in Colombia Guatemala Honduras Nicaragua and Panama (For a description of the Colombia project see page 172)

Increasing assistance began to be given to efforts to control trachoma WHO consultants made surveys in Iran Morocco (French Zone) Taiwan and Yugoslavia The adviser sent to Taiwan also visited a number of other countries in the Western Pacific Region Pilot control projects were started in collaboration with UNICEF Mass treatment campaigns were undertaken on a limited scale in Morocco Taiwan and Tunisia In addition to giving direct aid of this type WHO began to co ordinate studies on subjects ranging from virological research to investigations on histopathology and on the effect of cortisone in cases in which clinical cure has apparently been obtained The Organization was also instrumental in initiating an exchange of research workers between

Tunisia Morocco (French Zone) Japan Egypt and Iran

A study of typhus in northern India was made with a view to planning control measures and projects were continued in Afghanistan and Peru Work was also continued on smallpox (e.g. investigations on dried smallpox vaccines and on the use of gamma globulin) and virus hepatitis

Other communicable diseases

Diphtheria and pertussis Immunization campaigns were continued with the support of WHO and UNICEF in Brazil Chile and Colombia and a campaign against pertussis was started in Mauritius

Typhoid fever Aid was given to Yugoslavia in a field trial of typhoid vaccine

Leprosy WHO helped the Governments of Burma and Ethiopia with surveys followed by pilot projects of mass treatment Consultants visited Turkey and Thailand to make surveys and recommend methods of control Progress in the immunology and treatment of this disease is bringing about a change in policies—"institutional isolation is being replaced by better organization of health services to ensure the early recognition of cases and by ambulatory treatment"

Bilharziasis WHO continued to encourage the study of the snail vectors of the disease and to aid in control projects in Egypt and the Philippines

PUBLIC HEALTH SERVICES

Strengthening national health administrations

The strengthening of national health administrations is the "fundamental objective of WHO's assistance to governments" Differences in the economic and cultural conditions and in the social and economic development of countries necessitates the use of a variety of methods to achieve this objective and progress is often slow

During the past year attention has been directed to (1) co-ordinating existing national and international health work (2) stimulating the improvement and reorganization of health services and (3) surveying planning and demonstrating integrated health services in local areas Specific examples of the type of aid given in the improvement and development of health administrations and

Virus and rickettsial diseases

"WHO's programme [on the virus and rickettsial diseases] which began with the establishment of an international network of influenza centres has now reached a stage at which its scope can be gradually broadened to cover other virus diseases for which international co-ordination of research is needed so as to provide in each country a nucleus which may eventually be developed as part of a public health laboratory service. In 1953 certain laboratories within the network were asked to co-operate in work on poliomyelitis. Other diseases on which selected laboratories are being or will be encouraged to co-operate either for diagnosis or for research include smallpox, diseases caused by the lymphogranuloma, psittacosis, trachoma, group diseases caused by viruses found in the stools such as the Coxsackie group and virus hepatitis. Flexibility is essential in developing this programme for the requirements for various virus diseases differ in detail though they are similar in principle."

In influenza, experience gained during the widespread epidemic of influenza A that took place in the northern hemisphere in the

early part of 1953 was particularly valuable. Detailed studies of the epidemiological information received and of the viruses which were isolated are still in progress and will eventually be reported. A symposium on influenza, containing important reviews on various aspects of the disease, was published in the *Bulletin*⁴ and in the *Monograph Series*⁵.

Towards the end of the year work on poliomyelitis was started. A laboratory capable of making the necessary studies will be designated in each region or continent; later the network will be extended and developed in somewhat the same way as was done with regard to influenza.

The immunity survey begun by WHO in 1950 to delineate the southern boundary of the yellow fever endemic zone in Africa was

Bull. Wld Hlth Org. 1953, 8, 591-824.

World Health Organization (1954) *Influenza—a review of current research*. Geneva (World Health Organization Monograph Series No. 9). Price 17/6 \$2.50 or Sw fr 10.—

FIG. 8. CAMPAIGN AGAINST EYE DISEASES IN MOROCCO



People of the Ouarzazate district of Morocco (French Zone) are assembled for a medical examination as part of a campaign against trachoma and other eye diseases which are particularly prevalent in Mediterranean countries.

FIG 9 MALNUTRITION IN
INDONESIA



A doctor and a nurse examine a
child during a nutrition survey in
Jakarta Indonesia

DDT by the peritocal method for the eradication of
A. aegypti

The programme has shown that if work to
eradicate *A. aegypti* is to be successfully combined
with malaria control, it is necessary to make a close
check after the DDT spraying, for the presence of
A. aegypti and to re spray if required

It is still too soon for a complete evaluation of the
campaign, since the area has just received its second
spraying, but the results so far indicate that the
programme is at least on the way to success. It is
believed that the work of eradication of *A. aegypti* in
Colombia is more than half completed. This pro-
gramme will be expanded in 1954 and 1955 to other
regions of the country where malaria is endemic "

Altogether in 1953 WHO assisted in 35
projects in environmental sanitation utilizing
the services of 42 sanitation specialists in
37 different countries. In addition to giving
this direct aid to governments the Organiza-
tion made numerous special studies on
subjects such as the susceptibility of lice to
insecticides and standards of water quality
and published a monograph prepared by a
consultant on the toxic hazards of certain
pesticides to man *

Nutrition

WHO's work in nutrition continues to be
concerned largely with protein malnutrition
endemic goitre and problems in infant
feeding. In 1953 the Organization partici-
pated with FAO in two regional conferences
on nutrition: one in Bandung Indonesia, for
countries in South East Asia and the other
in Caracas Venezuela for countries in both
the Western Pacific Region and the Americas

WHO consultants are helping to make a
survey of the incidence of protein malnutri-
tion in Indonesia. In India the Organization
will co-operate in efforts to control endemic
goitre by the use of iodate for iodizing crude
sun dried salt. Studies on endemic goitre
in Latin America are being made through
the Institute of Nutrition of Central America
and Guatemala

Education in the proper feeding of infants
and children is an important part of the
activities in most WHO/UNICEF maternal
and child health projects. Particular attention
is being paid to the role of the public health
nurse in this aspect of the work since it is
she who is in most direct contact with
the mothers. Investigations of dietary cus-
toms and practices in various parts of the
world are being undertaken by WHO

Barnes, J. M. (1953) *Toxic hazards of certain pesticides*
man, Geneva (World H. al. & Organization Monograph Series
N 16). Price 7/6, \$1.50 Sw fr 6 -

services are provided by the work done in Burma, Colombia, and Panama

On the basis of recommendations of WHO the Government of Burma established a Ministry of Health and consolidated its national health service. The Burmese Government also authorized an increase of 40 per cent in the salaries of medical and para medical staff in order to encourage them to work full time in government service. In Colombia a survey of the municipal health administration in the city of Bogotá was made by a WHO consultant. In Panama a WHO team completely reviewed and studied the rural health services with a view to their systematic planning and organization for the whole country and to develop a model health unit in the area of La Chorrera a wide economic social and health survey was made in the course of which 400 families in the city itself and others in the adjacent rural district were interviewed

Training of professional and auxiliary workers also forms part of the Panama project in 1953, a five month programme of training for X ray technicians and a first training course for sanitary inspectors were completed, a course for public health nursing auxiliaries was started, and other courses for doctors, dentists, nurses and laboratory technicians were in preparation

Environmental sanitation

The Organization's environmental sanitation work widened considerably in scope during 1953. Direct assistance to governments aimed to improve teaching and training to strengthen national health administrations by advisory services, and to demonstrate accepted procedures in sanitation and modern methods of insect and vector control

During the past three years WHO has been particularly concerned with the training of national workers experts have been provided to start training schemes or to assist in improving those already in existence and fellowships for advanced study abroad

have been awarded. Work of this nature is illustrated by aid given in a training course for sanitary inspectors in Liberia which was completed in March 1953, a nine month course for sanitary engineers which was started at the University of São Paulo Brazil, and a four month course for twelve sanitary inspectors from eight different countries which was given at the end of the year at the School of Public Health in Santiago Chile

WHO has also helped governments with specific sanitation problems, such as fly and other insect control, garbage disposal and the study of sanitary conditions in and around airports. Malaria teams have usually included sanitarians, who, by their work show the place of sanitation in malaria control

An example of WHO aid in insect control is provided by the campaign which has been in progress in Colombia for some time

A programme of insect control has been going forward in Colombia. Its objectives are to eradicate *Aedes aegypti* the vector of yellow fever at the same time controlling malaria and other insect borne diseases by systematic application of residual insecticides and larvicides

"The work in Colombia has been a combined operation in which the Government assisted by the Servicio Cooperativo Interamericano de Salud Publica of the Institute of Inter American Affairs has been responsible for the administration of the project, UNICEF has furnished some supplies and WHO has provided technical advice on malaria control and *A. aegypti* eradication

The area chosen for the initial work was the most difficult one in the country the Caribbean zone. Surveys were made before the spraying was started in April 1952 a year later as soon as the first spraying was finished the second cycle was begun. The second operation was not handicapped by the difficulties which delayed the first such as the lack of equipment and of well trained personnel and the work was carried out much more quickly. Surveys were made before and after each spraying to ascertain the incidence of malaria and the presence of *A. aegypti*. DDT spraying of walls was used where malaria was present whereas water containers were treated with

health education. Examples of this integration can be found in rural health work that is going on in Ceylon, El Salvador, India, Taiwan, and Thailand.

WHO aid is especially needed and valuable in building up national training programmes for personnel to work in maternal and child health. International teams of doctors and nurses have been working with national staff in demonstration centres for this purpose in 20 countries, in most cases with UNICEF help as well. An illustration of this work is provided by the training programme in Pakistan, which is described at some length in the Annual Report.

In 1947 the new State of Pakistan had very few medical or para medical personnel and quite inadequate facilities for training. By 1950 there were only 15 nursing schools and 13 midwifery schools and few other courses in public health nursing. In maternal and child health there was on the average one trained woman worker for every 150 000 of the population.

"In this situation the Government gave priority to training for work in maternal and child health. It was decided to train auxiliary workers to be called community health visitors—young women of good education, trained for 27 months in maternal health, midwifery and public health and paediatric nursing. One trained health visitor for every 10 000 of the population and the training of 30 per year were taken as practicable objectives. These auxiliary workers were also given instruction in health education and the treatment of disease as they would work where other services are rare and were trained to teach and supervise the indigenous midwives (dais).

"The first training school for community health visitors was started in Lahore in 1951 with help from WHO and UNICEF. The project was based on the existing Punjab health school and made use of several of the Lahore hospitals for women and children. Public health work including domiciliary midwifery was done from two maternal and child health centres. An area outside Lahore was used to give each group of students experience in rural health work. WHO supplied fellowships and six international staff members and UNICEF provided equipment.

FIG 10. MATERNAL AND CHILD HEALTH IN PFRU



The visiting public nurse examines the mother, her newborn twins and the other children of the family.

Mental health

It becomes increasingly evident that the methods which WHO has used to support the traditional branches of public health work are not wholly appropriate for developing an international programme in mental health. In mental health the Organization inherited from the permanent and emergency international health organizations which preceded it no secure foundations on which to build. In its first few years therefore it has been attempting to evolve methods which are appropriate to international action in this field.

One form of direct aid to governments in mental health work which has proved most valuable is the provision of the services of short term consultants. By this means the Organization can put temporarily at the disposal of a Member State an expert of international standing who can help national experts survey needs and plan services. The required services can, in the long run, be developed only by national personnel and aid in the training of such personnel is often given through WHO fellowships. Visiting consultants may help in selecting candidates for these fellowships, as they did in 1953 in Guatemala, Japan, Lebanon, the Sudan, and Syria.

Increasing attention was paid during the year to projects of benefit to more than one country, particularly to regional seminars on mental health subjects. Among these were a seminar on alcoholism held in Argentina, one on the mental health problems of childhood in Australia, another on the development of psychiatric services for the Eastern Mediterranean Region in Lebanon, and still another on the mental health aspects of public health practice in the Netherlands.

The success of these seminars suggests that this type of activity is particularly appropriate to WHO's mental health programme.

In addition to sponsoring seminars WHO participated in a number of meetings of groups which also included experts delegated by the United Nations and UNESCO. The

results of a study made by a short term consultant were published in a WHO monograph *The African mind in health and disease*. An inquiry on legislation concerning the treatment of mental disorders was sent to Member governments and a critical survey of the replies received is being made with a view to putting forward guiding principles which might be useful to governments that are contemplating changing obsolete laws on this subject.

In summarizing the experience of the Organization to date the Annual Report states

"The lesson to be drawn from the first five years of WHO's work in mental health is that the programme is most likely to be successful when it helps to develop new knowledge to the point where it can be applied to the local needs, conditions and possibilities in particular countries and when it facilitates the interchange and distribution of that knowledge. Studies at headquarters meetings of experts, regional seminars and consultants to assist countries in studying their problems are the essential components of such a programme."

Maternal and child health

WHO's activities in maternal and child health are directed mainly towards giving advice on the improvement or establishment of relevant health services through the assignment of consultants or visits of regional advisers helping to train the necessary personnel, and studying or participating in studies on particular problems such as premature infants, physically and mentally handicapped children and school health services.

Considerable progress was realized in 1953 in integrating health work for mothers and children into general health services and into specific projects—e.g., in environmental sanitation, the control of communicable diseases, the improvement of nutrition and

Carothers J. C. (1953) *The African mind in health and disease*.
Geneva (H o H Health Organization Monograph Series No 17)
Price 10/- \$2.00 or Sw fr 8 -

Two special studies were continued during the year one on nursing legislation resulted in the publication of a survey of recent laws concerning nurses in 22 countries¹ the second on the functions of the "asistante sociale" in France and the "health visitor" in England was completed and will be reported on in 1954

Other services

The rapid industrialization of many under developed countries is being accompanied by many problems affecting the health of workers WHO is therefore planning to give increased attention to occupational health and has undertaken a study of how its activities in this domain may be strengthened Thus far however financial difficulties have prevented the implementation of some projects though help has been given to Egypt Finland Iran Turkey and Yugoslavia in assessing relevant problems and developing suitable programmes A European seminar on occupational health was held in Milan in September 1953 Close liaison has been maintained with the ILO and several problems have been studied jointly

In 1953 projects in medical rehabilitation were continued in India Japan Greece and Yugoslavia UNICEF aid was given to the latter two Also with UNICEF WHO helped in a project for the rehabilitation of physically handicapped children in Israel Several countries received assistance on questions of medical care and hospital administration and a study made by a consultant on rural hospitals was published as a monograph²

A dental health consultant was employed by WHO for a short term assignment early

in the year This consultant made a comprehensive study of the use of fluoride in the prevention of dental caries visiting the USA and several European countries to gather information

Two regional conferences on health education of the public were organized by WHO in 1953 one in London at which 18 countries were represented and the other in Mexico at which there were participants from 11 countries Consultant aid was given to a number of countries Ceylon Honduras Sarawak Singapore and Turkey The services of three anthropologists were provided to study the cultural characteristics of selected population groups in two of the WHO regions in order to prepare the way for planning and developing health work Two Arabic speaking workers in health education were assigned to assist in maternal and child health programmes in Libya Activities such as these are evidence that the importance of health education as part of health programmes is being increasingly recognized

Health work among Palestine refugees

WHO continued to plan and direct the health work of the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWAPRNE) and to provide a full time medical officer a malariologist and a public health engineer and consultants The Annual Report for 1953 contains a review of the health situation and activities in the refugee camps during the year It is noted for example that a widespread programme of immunization was undertaken 261 200 smallpox vaccinations 253 800 TAB inoculations and 269 300 diphtheria inoculations were given Malaria control was continued on a maintenance basis in the Gaza district Nutrition was studied and improved Also continued was

¹ *Dis. Hlth. Leg.* 1953, 4, 463. See also *Chron.* 1124. *Hlth. G.* 1953, 7, 792. Price of copy 1 sh. 0.25 or 5 sh. 1.

² *Bridgman, R. F. (1954) L. Hlth. of rural—S. 2210. et non* *arrenda low Geneva (World Hlth. Organ. in line. Monog. arch. Ser. N. 21) (Engl. h. edition) prep. ra. on) Price 13 s. 2.00 or 5 s. 1.*

The project received the full interest of local authorities at all levels

Schools of nursing students from medical colleges and university students of political science have used the training facilities provided the Institute of Hygiene has co operated in some of the courses and two trainee social workers from a voluntary organization were attached to the international team. These contacts were useful and have shown the influence that a project in one aspect of health can have on related services the curriculum for the training in the centre was adopted by the Central Nursing Council for all Pakistan and three other projects in maternal and child health—also assisted by WHO and UNICEF—were planned closely following the pattern developed in Lahore

The project provided many services for the public and the extent of community participation achieved is shown by the fact that 91 per cent of the mothers contacted paid an average of four visits to the centre 72 per cent of the infants born were seen during the first week of life and an average of nine home visits was paid to every infant contacted

Within a little over two years since the project started 137 student nurses and community health visitors have completed the preliminary school training 77 the midwifery training and 30 the full course for the diploma The centre has also given short refresher and other courses

"When this project was completed in July 1953 the international staff left a fully developed and active training scheme headed by local doctors and nurses

Nursing

The objective of the WHO nursing programme is to help Member governments to assess their particular needs and resources and to provide an increasing number of adequately trained nurses capable of carrying out the essential functions of their profession With regard to the first of these two aims, WHO in 1953 helped six governments—Burma Iran, Libya, Pakistan, Syria, and Thailand—to establish or extend the nursing divisions in their health administrations and to study their countries immediate and long term needs for nursing services Aid in the provision of nurses took the form of training projects of various types assistance to nursing schools was given by WHO

nursing education teams to Afghanistan Burma Cambodia Costa Rica, Malaya, Syria, and Taiwan special courses were organized with the help of WHO nursing instructors, in Burma India Malaya, Mexico Thailand, and Turkey in Israel, a WHO nurse teaching mission gave a six week course to 137 selected nurses, and WHO started training local instructors for courses for auxiliary nurses and midwives in Brunei Ceylon Costa Rica El Salvador, Pakistan Paraguay, Peru, Taiwan and Thailand In addition, nurses attached to teams combating disease or demonstrating methods in maternal and child health gave instruction to local nursing personnel In all, 144 nurses of various nationalities were employed in field programmes 54 working in schools of nursing and 90 in demonstration and training centres

In nursing as in many other WHO programmes, national and international conferences are a valuable method of imparting new knowledge, of encouraging the exchange of information and experience and of stimulating governments to improve their nursing services A number of conferences were held during the past year

In 1953 WHO helped to organize conferences on nursing in the American European and African Regions In Rio de Janeiro 272 nurses from 16 North, Central and South American countries met to discuss two problems of major concern to them—legislation for nursing and education for nurses Nursing education was also discussed by representatives from 21 European countries at a conference held in Switzerland in October This group of 47 nurses from the hospital and public health services was particularly concerned with methods of co-ordinating these two services of strengthening team work and of providing staff education At a regional nursing conference in Kampala Uganda in September and October the development of nursing education in the African Region was studied by representatives from 20 States and territories This was the first opportunity for representatives of such a large number of territories to meet in Africa for the exchange of information on the nursing problems of their territories "

Epidemiological and health statistical services

1953 was the first year in which the International Sanitary Regulations were in force. All but six of the active Member States of WHO are now parties to the Regulations; the position of several overseas and outlying territories is still to be defined. While a number of points regarding the application of the Regulations were referred to the Committee on International Quarantine for interpretation or recommendation there was not one which required arbitration.

The Committee on International Quarantine at a meeting in autumn reached a number of decisions: it approved the delineation of the yellow fever endemic zone in Africa proposed by the Expert Committee on Yellow Fever subject to the agreement of the countries concerned; it suggested an interim delineation for the Americas; and it recommended that the validity of the yellow fever vaccination certificate should be nine instead of six years; that no certificate of vaccination against cholera be required of children under one year; and that in notifications of rodent plague "sylvatic rodent plague" which involves little risk to international traffic should be distinguished from domestic rodent plague.

During 1953 the new Epidemiological Cable Code (CODEPID) was completed and distributed to health administrations throughout the world. The Code which came into general use on 1 January 1954 "is designed to ensure reliable safe and economical telegraphic transmission" of epidemiological information.

WHO's work on health statistics continued to be concerned principally with (1) the collection and publication of health and vital statistics and of international studies based on them; (2) action to improve the quality

and international comparability of such statistics and studies; and (3) advice on statistical methods to national health administrations and to units at headquarters and regional offices and in the field. Of particular note during the year was the conference of National Committees on Vital and Health Statistics which has previously been reported in the *Chronicle*.¹¹

Drugs and other therapeutic substances

Activities relative to biological standardization during the year included the establishment of new international standards for therapeutic prophylactic and diagnostic agents; preparatory work for the establishment of additional new standards and for replacing those nearly depleted; and a detailed study by a consultant of the arrangements for the distribution and use of standards under the national control centre system in the South East Asia Region. Further steps were taken to facilitate the sending of biological materials by post.

The work of the International Salmonella and Escherichia Centre in Copenhagen continued to expand and the International Blood Group Reference Laboratory in London completed its first year of operation under WHO sponsorship.

Pharmaceutical specifications and nomenclature

Considerable progress was realized during 1953 in the preparation of Volume II of the *Pharmacopoea Internationalis*; work was started on a second edition of Volume I. A special study was made of the system for the selection of international non-proprietary names for drugs and a "consolidated

¹¹ *Chron. Wld Hlth Org.* 1954, 8: 7. Papers presented at the conference will be published in the forthcoming number of the *Chronicle*.

the training of selected refugees as para medical personnel during the year, 147 refugees received training to prepare them for work as nurses medical orderlies, childbirth attendants laboratory technicians

malaria technicians, sanitarians or pharmacy attendants

Eighty one UNRWAPRNE clinics now serve the refugees, and there are more than 2 000 hospital beds available

EDUCATION AND TRAINING

WHO's programme in education and training comprises three main types of activity fellowships, assistance to educational institutions and exchange of scientific information

WHO has now seven years of experience in helping to bring new skills techniques and developments from the countries where they are available to those that lack them Either students travel to the teacher (through fellowships) and thus learn in a foreign environment or the teachers (consultants teams) themselves go to teach the students in their own country

WHO has given help in establishing advanced training institutions in some countries where they were lacking or insufficient In other countries particularly those without facilities for training in medicine nursing or sanitation WHO has helped to prepare long term plans to increase the nucleus of trained personnel and has granted fellowships for undergraduates in medical or related subjects In 1953 51 such fellowships were given to undergraduate of Bolivia Ethiopia Laos Liberia Libya and Saudi Arabia

For the first time in seven years there was no increase in the yearly number of fellowships granted by WHO owing partly to financial stringency and partly to the fact that those who participate in conferences seminars, and similar meetings are no longer reported as Fellows An evaluation of the fellowship programme was begun during the year In a preliminary experimental study of some of the early fellowships it was found that of 140 on which data were available nine were regarded as wasted and 131 as successful

Aid to professional and educational institutions was expanded in 1953 Professors and teaching materials were provided for students in a number of countries Afghanistan

tan Ecuador India Indonesia Pakistan Paraguay, and Malaya (Singapore) in all 16 WHO appointed professors and one dean were working in medical and public health schools during the year In addition 51 instructors in nursing education appointed by WHO were participating in 19 national projects

Exchange of scientific information is fostered through seminars conferences symposia and group training courses such as those mentioned in previous sections and through visiting teams of medical scientists An example of the latter is the teams of specialists which visited Indonesia and India in 1953 A new form of exchange has been started on a small scale—namely the exchange of research workers to enable scientists engaged in related types of public health research to visit one another's laboratories and exchange ideas

WHO published in 1953 a directory of the 568 medical colleges in the world ¹⁰ With the collaboration of 129 professors in 92 medical schools the Organization prepared for publication by UNESCO a list of material necessary for teaching anatomy histology bacteriology biochemistry hygiene morbid anatomy physiology and pharmacology This list is designed to aid professors and schools in re-equipping or buying new equipment for their departments it also provides indirectly information on the type and content of the teaching of these subjects in various medical schools

World Health Organization (1953) *World Directory of Medical Schools* Geneva Price (clothbound) £1 5s 5d 00 or Sw fr 15 -

SUMMARY

In considering and evaluating the year's work as a whole the Director General in the introduction to the Annual Report summarized the situation thus:

The year 1953 must be viewed as still part of the early history of the World Health Organization and hence as a year of growth, adjustment and consolidation. On all organizational levels, at headquarters and in the regions, further efforts were made to study—and apply as much as possible—the lessons which resulted from the trials and errors as well as from the achievements which characterized the first years of WHO's existence. I am sure that as this Report for the year 1953 unfolds, its readers will find increasing evidence of activities having been planned and having been more adequately adapted to what has been emerging as one of WHO's most important goals: to contribute by all available means to the strengthening of national health administrations.

Indeed, there can be no doubt that most of the projects developed during 1953 have a more concrete and a sharper definition than those of the early years of the Organization. It is also obvious that the criteria of realism have been guiding us more and more in the selection of techniques and methods through which these projects have been carried out. Above all, there is revealed a growing awareness in all of us of the need to plan WHO's role in promoting

world health as comprising only one part—although admittedly a vital and central one—of the general framework of all national and international efforts to improve social and economic conditions throughout the world.

In this process of the shifting of emphasis from activities designed to meet emergency situations to well-balanced programmes destined to satisfy long-term needs, some of the projects executed during 1953 may have lost part of the dramatic appeal which the earlier ones of the Organization had for both the technical and the lay public. But that loss is, in my opinion, largely compensated for by the increased efficiency the Organization has gained thanks to better understanding of the various types of contribution it can make to the improvement of health and the attainment of greater prosperity.

“Thus new fact is to a varying degree reflected in many of the results achieved by WHO in 1953. That such advances could be made despite the extremely serious and prolonged financial crises WHO had to face during the year is further proof of its strength and dynamism.”

procedure was established by the Executive Board. A list of 299 proposed international non proprietary names was prepared and published in the *Chronicle*¹

Drugs liable to produce addiction

The Sixth World Health Assembly unanimously recommended that campaigns be undertaken to convince physicians and governments that diacetylmorphine (heroin) was not irreplaceable in medical practice and that Member States that had not already done so should abolish the importation and production of this drug. The resolution of the

Assembly was communicated to the Secretary General of the United Nations for consideration and appropriate action.

WHO gave advice to several governments on synthetic drugs with morphine like effect on morphine preparations with prolonged action and on questions of treatment. Investigations of the effect of khat and its addiction producing qualities were started by the Organization. Alcohol as a drug was considered by the Expert Committee on Alcohol¹² and drug addiction with special reference to hashish was discussed at a regional seminar on mental health sponsored by WHO and held in Beirut.

CONSTITUTIONAL, FINANCIAL, AND ADMINISTRATIVE DEVELOPMENTS

Membership

During 1953, Nepal and Yemen joined the Organization making the membership 84—including three Associate Members¹³

Financial position

The budget for 1953 was US \$9 832 754 with an effective working budget of \$8 485 095.

One of the major difficulties encountered by WHO during the year was the unexpected shortage of Technical Assistance funds: the Organization was allocated less than five million dollars and the programmes which had been planned were expected to cost about nine and a half million. The Executive Board

at its January 1953 session considered the resulting financial situation and decided that all resources available under both the regular budget and Technical Assistance funds should be taken into account in carrying out the Organization's plans for 1953. The Director General therefore planned to use those resources to continue programmes already in operation. The UNICEF Executive Board agreed that UNICEF should pay certain costs for project personnel so that joint projects might go forward.

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CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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SCHEDULE OF MEETINGS

- | | | |
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| 14-19 June | Conference on School Health Services | Grenoble |
| 23 June | Expert Committee on the International Pharmacopoeia | thirteenth session |
| 3 July | Geneva | |

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HEALTH PROGRESS IN THE EASTERN MEDITERRANEAN *

THE REGION

The Eastern Mediterranean Region which extends from East Pakistan in the East to the new country of Libya in the West from Syria and Iran in the North to Ethiopia in the South probably contains about 170 million people. It has been a crossroads of humanity since the beginning of time. The earliest known civilizations are still being dug up here and there in the region. Monotheistic religion came from this region and one has only to mention the art of writing and to use the word "chemistry" to indicate how much "North Atlantic" civilization is in debt to the Eastern Mediterranean.

For over one thousand years a great deal of this region was politically unified under the Persian, Macedonian and Roman Empires. For the first six centuries after Christ, much of the region was influenced by Christianity. Since then the major influence has been Islam which is today the major factor in the cultural unity of the region. Probably about 85% of the population are Moslems, about 5% are Christians of various denominations and about 1/10 to 2/10 are Jews.

Western civilization has of course affected most the parts of the region which are near shipping routes. The Mediterranean coast, Egypt and Pakistan have been much influenced by Western customs and practices. Yemen, Saudi Arabia and the Sheikdoms of the Oman in the Persian Gulf are still relatively unaffected. This Western influence has had much more effect on what one may call the "policy making classes" of the population than on the artisans or peasants. The upper classes have much the same birth and death rates, life expectancy and standards

of housing and education as their counterparts in Western countries but more than three-quarters of the people still continue to live very much as they did many centuries ago. The professional middle class which plays such a large part in the affairs of Western countries is comparatively undeveloped in this region. However this does not apply to Israel because of the very large immigration into Israel of European middle class people. For example Israel has one physician for about every 350-400 inhabitants while Iran has perhaps about one doctor for every 60,000.

About 80% to 90% of the whole region is desert and the difference between the town and the country and the desert for there are the three is very much greater than it is in North Atlantic communities. The desert is not an uninhabited waste but is frequently a kind of grazing steppe with considerable extremes of temperature, very little rain and scanty vegetation. It is inhabited by a small population for its size of nomads. The countryside is restricted usually to narrow tracks beside the rivers and has hot summers and temperate winters and very considerable productive capacity for its area. The urban population varies greatly from country to country—e.g. it is estimated at under 10% in the Sudan and the Arabian peninsula, about 40% of the population of Lebanon and perhaps 50% of the population of Israel. The nomads are probably one third of the population of the Arabian Peninsula but they are a very small percentage of the people of Egypt and Lebanon.

HEALTH CONDITIONS

By and large statistical data for this region are inadequate and usually not very

* Prepared by Dr. Aly T. El-Shouh, Regional Director, before the Council of the American Public Health Association, New York, November 1953. This paper has also been published in the *American Journal of Public Health*, 44: 18.

reliable Egypt, which is in many ways one of the best developed countries, has a census taken at ten yearly intervals which is fairly reliable but this can be said of practically no other country in the region. There are high birth rates and fairly high death rates the latter are, however falling. The rates of natural increase are going up partly because of decreases in general mortality, particularly in infant and child mortality, although these rates are still high by comparison to Western standards.

The main achievement of modern public health methods in the Middle East has been the control of pestilential diseases. Today, when these diseases reappear in epidemic form, they can be localized and stamped out by national health services, with assistance, if necessary from WHO—as was the case in Egypt during an epidemic of cholera in 1947.

The fight against debilitating endemic diseases has begun. Thus far, the most important successes have been realized in combating malaria, which has been almost entirely eliminated from Cyprus, confined to small areas in Israel and Lebanon, and brought under control in some districts of other countries. The village populations in most areas however are still burdened by a combination of such chronic illnesses as malaria, trachoma, bilharziasis, hookworm, and venereal diseases which shorten their lives and reduce their capacity for work. Most of the governments are planning to launch campaigns against these diseases, through use of insecticides, drainage of swamps and canals, provision of adequate waste disposal systems and hygienic water supplies, and establishment of village clinics and dispensaries. In the majority of the countries concerned such measures have as yet reached but a small proportion of the population. In general any appreciable improvement in the lot of the Middle Eastern peasant is inconceivable without the institution of a broad sanitation programme.

Aside from the communities in which special health centres have been established, the nomadic and village population has practically no access to medical care since there are very few physicians or hospitals outside the larger cities. In Iraq for example there was in 1945, a population of 4 611 000 with only 569 physicians, of these, 308 were located in the capital, Baghdad, which has less than 10% of the population of the country.

In the Middle East, there is a basic and urgent need not only to train many more doctors, nurses, and public health officers, but also to develop a medical and health corps dedicated to rural services. The financial difficulties involved in developing such trained personnel and in supporting their work among poverty stricken villagers who cannot afford fees, constitute tremendous problems in these countries, as do the difficulties that arise from the fact that city trained medical and health personnel are often reluctant to live and work in isolated "backward" villages where they can enjoy few of the amenities and satisfactions of life to which they are accustomed.

The nutritional level of the peoples in this region cannot be regarded as satisfactory. Diet often consists mostly of cereals, pulses, and vegetables with very little animal or fish protein. There is fairly often a deficiency in calories in fats and proteins, and in certain vitamins and minerals. Most of the governments are aware of these deficiencies and studies are under way to determine what can be done about them.

WHO ACTIVITIES

Two main trends can be seen in the health work of the World Health Organization in the Eastern Mediterranean Region assistance to governments in (1) the strengthening of public health services and (2) extending and improving educational facilities for

medical and related personnel including auxiliary health workers. These lines of work have been developed to fill needs made manifest by studies and surveys carried out since the Regional Office was opened in 1949.

In many countries of the region health ministries are at an early stage of their history and the help of experienced public health officers during this expansion period is important. In addition training facilities are notably inadequate especially in public health and WHO is concentrating on aiding governments to meet some of these needs.

Advisory services

The Regional Office helps governments with advisory health services of all kinds—visits of the technical staff of the Office of special consultants who are experts in their particular field of work and of missions composed of several highly qualified persons.

Public health officers have been appointed to assist a number of governments including those of Ethiopia, Iran, Libya, Saudi Arabia and Yemen. Jordan, Lebanon and Syria are served by the Area Representative in Beirut.

Two public health missions composed of specialists from various countries spent several weeks each in Egypt and Israel studying government services and making recommendations. Special missions along the same lines have included a medical teaching mission to Israel and Iran and thoracic surgery and nurse training missions to Israel.

A number of public health surveys of selected areas in various countries have been made and a health demonstration based on WHO recommendations is already in operation in the Qalyub area of Egypt. Some surveys are very broad in scope such as a bilharziasis survey which included Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Somalia, the Sudan, Syria and Yemen and a mental health survey that was made in Egypt, Iraq, Lebanon, the Sudan and Syria. A food

hygiene survey has just been completed in Egypt, Iraq, Lebanon and Syria and a nutrition survey was made some time ago in Iran, Jordan, Lebanon and Syria.

Most special surveys however involve only one country: cerebrospinal meningitis in the Sudan, leprosy in Ethiopia, cholera in Pakistan, nursing in Israel, mental health in Jordan, pellagra in Egypt, ankylostomiasis in Iraq, handicapped children in Lebanon, industrial health and occupational diseases in Egypt and in Iran, trachoma in Iran, bacteriology in Israel and hospital services and organization in Egypt. A medico-legal consultant has visited Lebanon.

Training and fellowships

Education is an essential part of the WHO approach to improvement of health services. The training of medical and other health workers is accomplished in four ways: (1) by developing instructors and administrators; (2) by training doctors, nurses, public health engineers and sanitarians; (3) by granting long range fellowships for undergraduate studies; and (4) by training auxiliary health workers as a shortcut to overcome immediate and serious shortages of personnel.

In practice this has led to the appointment of visiting professors of physiology and pathology to the Dow Medical College, Karachi; of a lecturer in parasitology to the Royal Medical College in Baghdad; of a lecturer and research worker in virology (especially concerning trachoma) to the Giza Ophthalmic Memorial Hospital in Egypt; of a lecturer in public health to the Medical Faculty of the French University in Beirut; of a public health expert to aid in the establishment of the new department of public health at the American University of Beirut and to act as director for the first two years of instructors to the Ashraf School of Nursing in Teheran and of instructors for the University Nurse Training School in Damascus.

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WHO is associated with the Technical Assistance programme and the ILO in a regional centre for the rehabilitation of the blind in Egypt

Disease control

Malaria-control projects are under way in Iraq Saudi Arabia and Syria. A successfully completed international project in Iran is now being carried on by Iranian members of the demonstration team with the technical advice of WHO and financial assistance from USFOA. WHO has just completed assistance to a project in Lebanon now under the direction of the national team. DDT for future operations has been requested from UNICEF. A project in Pakistan completed by WHO is being extended by the national team. DDT for this work is being provided by UNICEF.

Egypt and Pakistan are now building DDT plants with Technical Assistance funds and part of the production will be utilized for public health purposes.

The extent of the bilharzia is problem in the region has warranted the special attention of a team of experts who studied the situation in a number of countries as mentioned above. In Egypt a co-ordinated project that includes snail destruction treatment of cases health education and environmental sanitation is in progress. New snail killing chemicals are being tried out to determine their relative effectiveness. A similar project combining malaria and bilharziasis control has been initiated in the Jezirah district of Syria.

The high incidence of trachoma has made it the object of special studies for some time but difficulties have been encountered in devising a practical method for mass campaigns. A pilot control project is to be undertaken in the Qalyub Health Demonstration Area in Egypt and this may indicate the best approach for other countries of the region.

The first venereal-disease-control project in the region was carried out in Egypt and is now completed. Besides demonstrating control methods it provided training for serologists nurses laboratory technicians and social workers from Egypt Lebanon Pakistan and Syria. Similar projects are now under way in Ethiopia Iran Pakistan and Saudi Arabia. A bejel/syphilis control project has been completed in Iraq and another will soon begin in the adjoining country of Syria where health conditions are in many ways similar.

A leprosy survey was made in Ethiopia in 1950 and on the basis of the recommendations which resulted a demonstration of leprosy control took place there during 1952. A similar project is now planned for Iraq.

The attack on tuberculosis is twofold namely through demonstration and training centres for control of the disease and by BCG vaccination campaigns (financed largely by UNICEF) which are being integrated with the work of the centres. The first tuberculosis demonstration and training centre in Turkey—which was then in the Eastern Mediterranean Region—was a great success. New centres have now been opened in Egypt Iraq Pakistan (in Dacca and Karachi) and Syria. Others are to open soon in Ethiopia Iran Israel and Jordan. BCG antituberculosis vaccination campaigns have already been completed in Aden Egypt and Syria and BCG vaccination has been established as a national service. Campaigns are in operation with international help in Ethiopia Iran Iraq Jordan Libya and Pakistan and a survey of needs has been made in Saudi Arabia.

Plans to help control the annually recurring epidemics of cerebrospinal meningitis in the Sudan have been made but lack of funds has so far prevented their execution. A study of the situation was made and experimental work was done by a special consultant and Regional Office staff members.

The training of community health visitors in connexion with maternal and child health projects in Peshawar, Dacca and Lahore has been organized. Similar projects have recently been initiated in Baghdad and Karachi and two more are due to start shortly, in Jordan and Libya. A comprehensive training scheme for community health visitors and sanitary aides has been developed for Ethiopia.

A number of individual fellowships in undergraduate medicine have been awarded to students from countries such as Ethiopia, Libya and Saudi Arabia, where there are no medical schools. Many fellowships for postgraduate study of subjects ranging from anaesthesia to zoonoses have been arranged. Twenty-four fellowships to study public health have been awarded, and fellowships to study the school health systems of Denmark and the Netherlands were awarded to a group of students from Egypt, Iran, Iraq, Israel, Jordan, Lebanon and Syria.

The total number of fellowships awarded in the past few years and the sources of funds were as follows:

Year	WHO	Technical Assistance	UNICEF	Total
1951	80	6		86
1952	53	52	8	113
1953	147	54	2	203

The seminar is another form of training being used. Examples are the Regional Eye Diseases Seminar held in conjunction with the jubilee meeting of the Egyptian Ophthalmological Society, for which ten fellowships were awarded to ophthalmologists from different countries in the region; a joint FAO/WHO nutrition seminar held in Cairo in 1950, and a training course in vital and health statistics in 1951, in which WHO co-operated and which was attended by Fellows from eight countries, and a mental health seminar held in Beirut in 1953 with 20 participants from eight countries.

Maternal and child health

Demonstrations of modern methods in maternal and child health including the teaching of domestic midwifery and minor paediatrics, are in progress in a number of countries. One project, in Lahore, Pakistan, has already terminated its international phase after two and a half years' work. Projects are under way in Iraq, Lebanon, Pakistan and Syria, others will be started in Iran, Jordan, and Libya. In addition, WHO is helping in the designing and equipping of the Children's Hospital in Karachi which is being financed by the Government with UNICEF assistance.

Nursing

The growing realization of the need for really good nursing services has led to the appointment of nursing officers to the Governments of Lebanon, Libya, Pakistan and Syria; similar help is planned for Egypt.

WHO has provided instructors for nursing schools in Iran, Israel, East Pakistan and Syria. Egypt will be host to a regional nursing college which is intended to provide nurses qualified to fill supervisory and teaching posts. Nurse training is included in maternal and child health, tuberculosis and venereal disease projects.

Rehabilitation of the physically handicapped

In Lebanon a model centre for the treatment and education of physically handicapped children is being set up with the co-operation of UNICEF and the Foreign Operations Administration of the USA (USFOA). This will be used as a regional training centre as well.

A physiotherapist and special equipment for a training school for the rehabilitation of poliomyelitis victims have been provided for Israel, also with the help of UNICEF.

FILARIASIS IN THAILAND

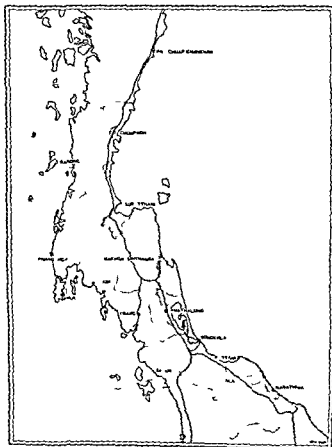
Filaria is an important public health problem in Thailand. It is endemic in the flat plains of the eastern coastal region of peninsular Thailand (see fig. 1) an area of approximately 2,200 square miles (about 5 700 km²) inhabited by a population estimated at 80 000—nearly one twentieth of the total population of the country.

At the request of the Government WHO

provided the services of a consultant, M O T Ivengar to make an investigation of the filariasis problem and to suggest suitable control methods¹ A report on his investigation has appeared in a recent number of the *Bulletin of the World Health Organiza-*

A report on an investigation of Blarinas in the Maline Islands, prepared by the same author was published in *Bull Wild Bird Org* 1952, 7: 375 and also *Chron. Wild Bird Org* 1953 7: 116.

FIG. 1. SOUTHERN THAILAND SHOWING AREAS OF ENDEMIC FILARIASIS



The shaded areas are those in which the investigation showed filariasis to be endemic.

A rabies control project was carried out in Israel in 1950 and is being continued by the Government, other forms of zoonoses are also receiving attention in Israel. Fifteen Fellows from the countries of the region attended a rabies seminar in Coonor, India, to learn laboratory techniques.

In Syria, a pilot project for favus control among schoolchildren is to begin in 1954 with UNICEF help.

Environmental sanitation

Sanitarians are indispensable in nearly every kind of health work and, although it has not been financially possible to develop many projects dealing specifically with environmental sanitation, this aspect of health has not been neglected. For example it is an integral part of health demonstration areas, of insect control, of epidemic disease control, and of maternal and child health work. The regional adviser on environmental sanitation has given advice on sanitation problems in projects such as cholera control in Pakistan, bilharziasis control in Egypt, the joint malaria and bilharziasis project in Syria, malaria control in Iraq, Lebanon, Saudi Arabia and Syria, the trachoma pilot project in Egypt, and an insect control project in Iran. A regional study of the importance of the fly as a health menace was made by a special consultant.

The American University of Beirut using USFOA funds has helped with the training of sanitarians. In the past three years 27 fellowships have been awarded to study environmental sanitation.

Health education of the public

It is recognized that health education is an urgent need in this region and that this must be combined with practical demonstrations to have effect. Health educators are being appointed in a number of coun-

tries—for example, in the recently completed venereal disease demonstration project in Egypt. A health educator is also working in the Qalyub Health Demonstration Area, Egypt, and with the bilharziasis-control project in the same country. Health education of the public has been initiated in Libya with the appointment of two Arabic speaking girls to begin on the problem of the health education of women. WHO is also participating in the Arab States Fundamental Education Project at Sirs El Layyan, Egypt, and has supplied a public health adviser and a health educator for the project. The adjoining Qalyub Health Demonstration Area will provide practical field work for the students.

Epidemiological intelligence service

The Regional Office in Alexandria is one of four centres in the world for the collection and dissemination of epidemiological information and quarantine notifications, which are then transmitted twice weekly by radio in a new code compiled by WHO. The regional centre also settles disputes that arise in the application of the new International Sanitary Regulations and collects health data on the Mecca Pilgrimage. In connexion with the latter, WHO is aiding in the equipping and staffing of the new quarantine station at Jeddah which is being erected by the Saudi Arabian Government.

Public health laboratories

To reinforce growing public health services aid is being given to develop public health laboratories in several countries. In Jordan, the public health laboratory in Jerusalem is already operating; help will be given to Israel to expand an existing laboratory and laboratories in Iran and Lebanon are in the planning stage and are to be established principally with USFOA funds.

FILARIASIS IN THAILAND

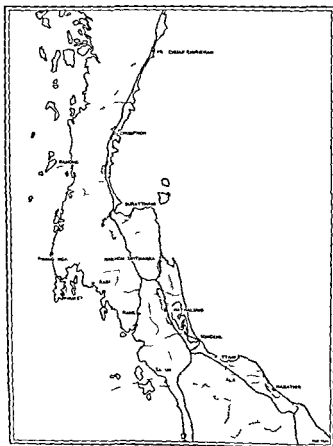
Filariasis is an important public health problem in Thailand. It is endemic in the flat plains of the eastern coastal region of peninsular Thailand (see fig 1) an area of approximately 2,200 square miles (about 5,700 km²) inhabited by a population estimated at 80,000—nearly one twentieth of the total population of the country.

At the request of the Government WHO

provided the services of a consultant, M O T Iyengar to make an investigation of the filariasis problem and to suggest suitable control methods.¹ A report on his investigation has appeared in a recent number of the *Bulletin of the World Health Organization*.

A report on an investigation of filariasis in the Maldive Islands, prepared by the same author was published in *Bull. Wld Hlth Org* 1952, 7: 315 see also *Chron. Wld Hlth Org* 1953 7: 118.

FIG 1 SOUTHERN THAILAND SHOWING AREAS OF ENDEMIC FILARIASIS



The shaded areas are those in which the investigation showed filariasis to be endemic

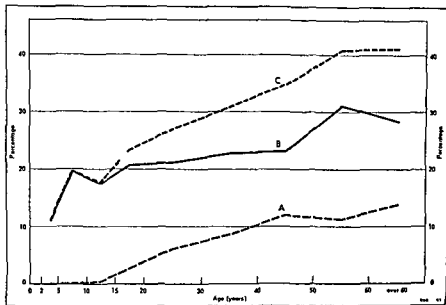


FIG 2
FILARIAL DISEASE
RATE, FILARIAL
INFECTION RATE,
AND FILARIAL ENDE
MICITY RATE BY
AGE, IN THAILAND
— 1951 2

A = filarial-disease
rate per 100 persons
examined
B = filarial infection
rate per 100 persons
examined
C = filarial-endemicity
rate per 100 persons
examined

tion,² from which the following summary is drawn

Out of 4,112 persons examined (i.e. by microscopic examination of peripheral blood drawn in the evening) 863 were found to be positive for microfilariae, giving a gross infection rate of 21.0%. All the microfilariae belonged to the species *Wuchereria malayi*, with the exception of one case of imported infection which was attributed to *W. bancrofti*. The number of microfilariae in the positive blood smears ranged from 1 to 600, in nearly 48% of the cases it was between 1 and 10.

Two hundred and fifteen persons among the 4,112 examined had filarial disease. Clinical manifestations were as follows: elephantiasis of one leg 109, of both legs 95, of one leg and both arms 1, of both legs and one arm, 7, of both legs and both arms 1, and hydrocele, 2. Apart from the two cases of hydrocele, no genital affections were noted, it is known that genital affection is very unusual in filariasis caused by *W. malayi*.

The investigation confirmed findings in other parts of the world to the effect that the

incidence of demonstrable filarial infection as indicated by the presence of microfilariae in peripheral blood is much lower in persons with filarial disease than in those without it as is shown by these data from endemic areas in southern Thailand

	Number examined	Number positive for microfilaria	Infection rate (%)
Persons with filarial disease	215	9	4.2
Persons without filarial disease	3 897	854	21.9

Filarial infection occurs even in the age group 2-5 years, in which the infection rate was found to be 10.9%. The rate increased to 19.6% in the group 6-10 years and continued to rise gradually, with a flattening out of the curve in the higher age groups. The filarial disease rate on the other hand was zero in the first two age groups, in the group 11-15 years it was 0.3% and then rose steadily to reach its highest level 13.7% in the age group above 60. These trends together with the filarial-endemicity rate which is based on the combined data are illustrated in fig. 2.

Sixty four species of mosquito were collected in the investigation some of them for the first time. Nine of these species (four of *Mansonia* and five of *Anopheles*) transmit filarial infection. Their breeding places are found in marshes and depressions in the vicinity of villages. Larvae of the different species of *Mansonia* are known to attach themselves to roots of aquatic plants. Little is known about the breeding habitats and biology of some of the vector species.

Filariasis is essentially a rural disease in Thailand and is prevalent where the population is least dense; the endemicity seems to decrease as the density of the population increases. Swamps which never dry up and small permanent water collections favour filarial endemicity. Infiltrations of salt water—i.e. by tidal creeks—diminish it.

Filariasis control may take several forms. Treatment of water collections with larvicides would not be economical; the control of aquatic vegetation would be both difficult and

expensive and would affect only the species *Mansonia*. Reclamation or drainage of marshes and other water collections would also be difficult and costly. Chemical prophylaxis of the population through systematic treatment with certain piperazine drugs although it would present formidable problems and would be expensive, might be considered as an adjuvant measure. The best control method according to Dr Iyenagar would be the application of residual action insecticides to destroy the adult mosquitos. Spraying twice a year, once during June/July and again during December/January with 200 mg of DDT per square foot (approximately 2.2 g per m²)—possibly in conjunction with malaria-control spraying campaigns—could considerably reduce the number of mosquito vectors and thus protect the population of Thailand against filariasis, though it would require many years for the benefits of this and other control measures to be fully realized.

Recent Statistical Publications

Two recently issued numbers of the *Epidemiological and Vital Statistics Report* contain data on mortality from various causes. The first *Mortality from selected causes in some countries in 1952 according to sex and age*¹ comprises tables on deaths from tuberculosis, malignant neoplasms, diabetes mellitus, pneumonia, bronchitis, cirrhosis of the liver, nephritis and nephroses, accidents, suicide and complications of pregnancy, childbirth, and the puerperium. The second,² which deals solely with maternal mortality, presents in tabular form the actual numbers and rates of maternal deaths in selected countries since 1936-8 and then a breakdown of the data for 1949-51 (in most of the countries studied) by causes as given in the International Abbreviated List of 1948 and according to the intermediate and selected detailed headings of the International List of 1948.

A third report,³ contains statistics for the past few years on cases of and deaths from diphtheria, infectious hepatitis, cerebrospinal meningitis (meningococcal) and poliomyelitis in a number of countries.

A fourth⁴ gives the numbers, rates and seasonal distribution of mortality from gastritis, enteritis and colitis in the world. The same report lists the number of cases of and deaths from cholera, plague, smallpox, relapsing fever, influenza, and malaria for 1953 and part of 1954.

Epidem. Ital. S. Ist. Rep. 1953 6 31

Epidem. Ital. S. Ist. R. p. 1954 7 37

Epidem. Ital. S. Ist. Rep. 1954 7 85

Epid. m. i. S. Ist. R. p. 1954 7 133

MATERNAL AND CHILD HEALTH IN SOUTH-EAST ASIA*

The World Health Organization started its work as a specialized agency of the United Nations on 7 April 1948. In December of the same year the Organization opened its first regional office that for South East Asia at New Delhi.

The task facing this regional office was challenging and enormous. Stated in general terms it was to assist the governments of the six countries in the Region (Afghanistan, Burma, Ceylon, India, Indonesia, and Thailand¹) to improve the health of peoples totalling 500 million, of whom 80% live in rural areas. In all the six countries one could find examples of the rule that poverty leads to poor health and poor health to poverty, and in all of them low per caput income was combined in varying degrees with high infant and maternal death rates and high birth rates. A general shortage of doctors, nurses and auxiliary health personnel was also universal.

The urgent needs of the Member countries represented such a challenge that the Regional Office for South East Asia could not afford to spend too much time on details of organizational planning or on surveys. It chose to act immediately and to learn by experience. However, action had to be adjusted to financial limitations.

With the modest amount of money that it had at its disposal the regional office alone would certainly not have been able to accomplish very much in the field of maternal and child health. But here the countries and the regional office received the assistance of another member of the United Nations

family—the United Nations Children's Fund (UNICEF).

Close co-operation between WHO and UNICEF has been developed, with the following division of functions. WHO is responsible for the technical aspects of the work and for providing international personnel while UNICEF furnishes supplies and equipment. Since its inception in 1946, UNICEF has allocated US \$174 million to South East Asia, of this total 40% has been for maternal and child health projects in co-operation with WHO.

It is a basic principle of both WHO and UNICEF to help governments only in their own efforts to improve their health services. Therefore in most of the WHO/UNICEF assisted maternal and child health projects the government contribution in terms of money often exceeds the combined contributions of WHO and UNICEF.

Although WHO fully realizes that mothers and children form the most vulnerable group of the world's population and therefore need special care it has always been the Organization's policy to consider maternal and child health as an indivisible part of general public health. For example in a country with a high incidence of malaria it would not be practicable to start special services for mothers and children unless first or simultaneously malaria was brought under control. Malaria, tuberculosis, yaws, worm infestations and malnutrition claim most of their victims among children. Therefore practically any health activity has a more or less direct bearing on the health of children and maternal and child health programmes have to be integrated with comprehensive health improvement efforts in order to be effective. For this reason WHO's activities

* This is drawn from an article by Dr G. Mettropol, Regional Maternal and Child Health Adviser, which appeared in the May 1954 issue of *Social Welfare*, the monthly journal of the Indian Central Social Welfare Board.

¹ Nepal has since been added, having become a Member of WHO in 1953.

in maternal and child health are based on simultaneous efforts to strengthen the general health services of the countries and to deal with first priorities first. Two other major considerations are that "prevention is better than cure" and that among the population to be served four out of every five persons live in rural areas.

In order to reach as soon as possible the millions of mothers and children living in rural areas the first and most basic need is for more personnel. In some parts of South East Asia there is only one nurse available for every 40 000 of the population. There are midwives facing the impossible task of serving an entire area with a population of 50 000 countries in which there are more doctors than nurses and even hospitals with more doctors on their staffs than trained nurses—a situation comparable to an army with more officers than soldiers. It is because of this need for more and better trained personnel that at the request of the governments in the Region WHO in close co-operation with UNICEF is giving help in maternal and child health mostly in the form of training and demonstration projects.

Such projects have been started in Afghanistan (one in 1950) Burma (two in 1951) Ceylon (one in 1951) India (one in 1950) Indonesia (one in 1951) and Thailand (two in 1951). While some of these projects are coming to an end in 1954 five new ones are to begin in India.

These eight projects follow basically the same pattern although there are some variations owing to adjustments to local needs and conditions. Their first and most important objective is to train more personnel and to train them better. Those who receive training include doctors, nurses, health visitors, midwives and in many instances auxiliary health workers such as assistant nurses and midwives and indigenous midwives (dais). Most of the training is on the undergraduate level but postgraduate instruction (e.g. in

service training and refresher courses) also forms part of nearly every project.

WHO provides for these projects international personnel numbering from two to eight but usually about five or six. The governments provide national counterparts to each of the international team members and as soon as possible the national personnel take over the work of the international team and continue it after the latter has been withdrawn.

One of the most comprehensive of the projects is that which was begun in Burma originally in conjunction with a venereal disease-control programme. At two maternal and child health centres extensive services have been given and the work has offered a means of training various types of personnel. In Kabul Afghanistan schools for the training of midwives and nurses have been started and a new maternity hospital is in operation. Training and demonstration centres for maternal and child health are also included in the project and expansion to rural areas is envisaged—this in a country in which owing to the strict purdah system hardly any female health worker was previously available. In Ceylon a training project in paediatric and maternity nursing has been completed. In India the maternal and child health project in a village near New Delhi has become an important and practical training field. In Indonesia the co-operation of the Government, WHO and UNICEF has led to a rapid increase in the numbers of available personnel, mainly midwives and home visitors who are to staff maternal and child health centres. In Thailand projects established in Bangkok and Chiangmai have stimulated the development of maternal and child health activities throughout the country.

WHO has awarded fellowships in all these countries in connexion with the maternal and child health projects so that national personnel could broaden their experience and

thus be fully qualified to take over the work of the international teams

Maternal and child health is not a domain in which quick results can be shown. Nevertheless it is gratifying to note that the combined efforts of the governments, WHO, and UNICEF have had effects reaching beyond the localities in which demonstration

and training projects have been situated. Much remains to be done. But there is every reason to expect that, with the continued support of UNICEF, WHO will be able to do even more in the future to help the governments of the South East Asia Region to improve the health of mothers and children.

Reports of Expert Groups

THE MENTALLY SUBNORMAL CHILD

A recently published WHO technical report¹ summarizes the discussions of a joint committee (United Nations, ILO, UNESCO and WHO) convened to examine the problems posed by the mentally subnormal child. These problems are many and complicated and require different public services to aid in their solution. Four main services are considered in the report: medical, educational, vocational and employment and social welfare. Adequate assistance to the mentally subnormal child and his family or family substitute can be given only within the framework of all these services, and the special needs of the mentally subnormal should receive attention as part of the larger effort embraced by the work of the relevant agencies.

The report emphasizes the importance of preventive and remedial measures in childhood through proper and timely action. Problems which might lead to difficulties in adulthood can be avoided. The first responsibility rests with the public health services. Once diagnosis or discovery is made, several steps should be taken: the cases should be referred to the proper authorities and specialist collaboration sought if warranted, the parents should receive help and advice, and a decision should be

made as to whether the child can be cared for at home or should be placed in an institution or foster home.

The various types of provision for the care of mentally subnormal children are dealt with in some detail in the report. Preference for home care is expressed.

As a general rule, home care is to be recommended unless the subnormality is very severe or the retention of the child in the home is likely to bring about serious maladjustment or the dislocation of other aspects of family life. Even children who are severely subnormal may be kept at home if the parents are able to take a realistic view of the situation and if they are able to make full use of comprehensive maternal and child health services. Moreover, generous financial and practical assistance to parents is still cheaper than hospital care, a point not often realized.

When the mentally subnormal child reaches school age, he becomes the responsibility of the educational authorities, just as does the normal child. The report states that no artificial barriers should be erected between normal children and those for whom special provision has to be made. Successful development of subnormal children within the limitations imposed by their handicaps is dependent upon special teaching methods, modified curricula, and much more personal

¹ *Wld Hlth Org techn Rep Ser* 1954 75 46 pages
Price 1/9 \$0 25 of Sw fr 1 — Published in English and in French

attention from the teacher than is required by normal children. Because of the last it is most important that classes be small. The teacher's task is "difficult and delicate" and she "needs the fullest support from the social psychological and medical services working as an integrated team."

The mentally subnormal adolescent and young adult presents a problem for vocational and employment services. Studies made since the second World War have shown that if jobs are available and the necessary assistance is given the majority of those whose subnormality is mild can find and keep work. As the report points out "There are in fact many occupations in an industrial society which subnormal individuals properly and carefully placed can perform." Specific suggestions regarding vocational guidance and training are included in the report. The social needs of subnormal

adolescents are also considered particularly from the standpoint of leisure time activities.

Other subjects discussed in the report are the training of personnel for work with the mentally subnormal parent and public education and legal considerations relative to the mentally subnormal. The imperative need for further research on all aspects of subnormality is stressed.

Governments are urged to provide the necessary aid for children with physical or mental handicaps and to co-ordinate the various services so as to allow for the fullest possible development of these children. With regard to the mentally handicapped in particular the report points out that "the prevalence of mental subnormality is such that in all countries its social costs are high" and that "there are therefore few societies which cannot afford to provide some services for the mentally subnormal."

PUBLIC HEALTH ADMINISTRATION

The second report of the Expert Committee on Public Health Administration¹ has as its subject "Methodology of planning an integrated health programme for rural areas." The nucleus of the rural health service of any area according to this report should be a local health unit "an organization providing or making accessible under the direct supervision of at least one physician the basic health services for a community." Within this unit may be health centres and sub-centres as required—places where the appropriate services may be given.

Considerable attention is devoted in the report to an analysis of the health services that should be rendered by intermediate and higher health authorities as distinct from

those that are within the province of local units. For example specialist services, hospitals, statistical studies, research and field investigations and co-ordination of the activities of smaller divisions are among the services which should be the responsibility of the former. Mental health and nutrition are particularly singled out as well since they can be dealt with at the local level to only a limited extent.

The basic services that should be provided by a local health unit are indicated in the diagram on the following page which also shows the organization of such a unit and its relation to the intermediate and higher health authorities.

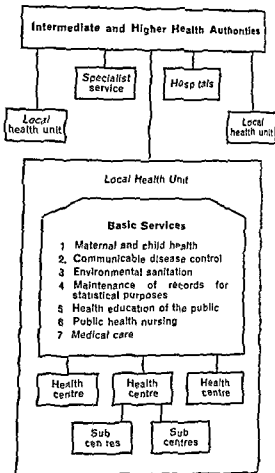
The report sets forth in some detail the functions of the local health unit with regard to each of these services. Other topics include personnel for local health work, the planning

¹ W.H.O. *Exp. C. on P.H.A.* 1954 83 46 pages. Price 19 \$0.25 or Sw f 1.—Published in English and in French.

of integrated local health programmes and the cost and financing of such programmes. An annex gives a description of an integrated health service adopted by the Indonesian Government for the Bandoeng Regency, which corresponds to a large rural area.

This report emphasizes the need for developing programmes based on local health units though it stresses too, the fact that a health service is only one aspect of planning at the local level for the welfare of the community since basic requirements in agriculture, education, social betterment and economic stability must also be considered.

THE ORGANIZATION OF A LOCAL HEALTH UNIT AND ITS RELATION TO THE INTERMEDIATE AND HIGHER HEALTH AUTHORITIES



PROGRESS IN MALARIA CONTROL

'The Second World Health Assembly resolved to work for the elimination of malaria from the world as a public health problem. At the time this aim seemed to many to be beyond the possibility of achievement, but a review of the present situation shows that very material progress towards it has been made. This statement is an introduction to the fifth report of the Expert Committee on Malaria,¹ which records this progress and also draws attention to problems still to be solved. Much of the credit for the advances that have been made is attributed by the committee to the efforts of WHO through its demonstration teams, training projects, conferences, fellowships and stimulation of research.

Malaria control by insecticides

It is pointed out in the report that there is great variety in the doses and frequency of

applications of residual insecticides used in current malaria control spraying and that local experimentation is desirable before undertaking any major control scheme. The main criterion of efficiency of the insecticide is its continued presence on treated surfaces in a form easily picked up and retained by insects that settle on them. Observations concerning specific insecticides and dosages are made consideration being given to present knowledge—or in some cases lack of knowledge—regarding various formulations and their staying properties and effectiveness on certain surfaces. Mud walls which are common in many malarious areas

Wld Hlth Org. *Technical Report Series* 1954. 80. 42 pages. Price 1/9 50.75 or Sw. fr. 1.—Published in English and in French.

present special difficulties and are under study.² The need for investigation of certain aspects of malaria control is noted—e.g. entomological studies and research on the physical and chemical properties of insecticides their interaction with wall surfaces and their mode of action on insects.

The development of resistance to insecticides by anophelines has been reported in two areas. *A. quadrimaculatus* has developed some resistance to DDT following prolonged larvicidal practice in the USA and *A. sacharovi* has developed resistance after imagocidal work occasionally combined with larvicides in Greece. On the other hand there are many large areas where there has been no apparent development of resistance in malaria vectors despite continued use of residual insecticides for periods of up to eight and nine years. It is concluded in the report that although this subject merits study the resistance thus far encountered does not constitute an important barrier to malaria control and should not deter governments from undertaking control programmes. However it is stated that accurate measurements of the susceptibility of anophelines to insecticides should be made before and periodically during major control schemes and a suitable technique for assessing susceptibility is described in an annex to the report.

Another interesting and significant development is the reported successful interruption of residual insecticide spraying in British Guiana, Greece and the USA. "Experience now clearly shows that the objective of malaria elimination to a degree when routine insecticide application can be ended is a feasible one." It is necessary to establish certain criteria for determining when "full elimination" has been achieved—the end point that makes it possible to discontinue spraying operations. By way of general guidance there is reproduced in an annex

to the report the "criteria of malaria eradication" established by the National Malaria Society of the USA. Once a policy of interruption of spraying activities has been decided upon it is essential to maintain certain safeguards chiefly to ensure rapid detection of recurrence of malaria and to eliminate it promptly.

Note is taken in the report of the study on the toxicity of pesticides which was made by a WHO consultant and the results of which have been published in the Monograph Series.³ Both DDT and BHC are considered safe and new insecticides which laboratory trials have shown to have a toxicity of the general order of these two "may justifiably be brought into routine use with reasonable precautions."

Malaria control by methods other than residual insecticides

Preoccupation with the efficacy of residual insecticides may detract from the necessity to employ other methods under particular circumstances. For example prevention of breeding remains the method of choice for combating malaria carried in some areas by the *Kerteszia* group or by *A. melas* or *A. squasalis*. Environmental sanitation plays an important role particularly when it can eliminate or prevent the creation of breeding places of mosquitos. In addition supplementary measures such as "selective therapeutic schemes" to support imagocidal campaigns may sometimes be desirable.

Chemotherapeutics of malaria

In a section on therapy the report considers the two most important newly developed antimalarial drugs pyrimethamine (Daraprim) and primaquine. The former is an effective suppressant in all forms of malaria

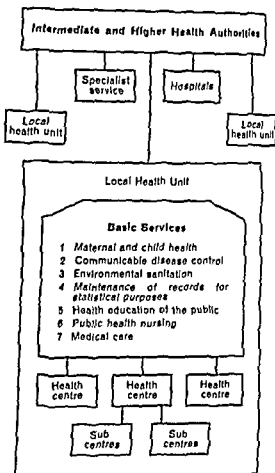
² Barnes J. M. (1953) *The hazards of crop in pesticide* 1 num. Gene (World Health Organization Monograph Series No. 16)

³ See I sample B II Wld Hlth Org 1953 9 39

of integrated local health programmes and the cost and financing of such programmes. An annex gives a description of an integrated health service adopted by the Indonesian Government for the Brandoeng Regency, which corresponds to a large rural area.

This report emphasizes the need for developing programmes based on local health units, though it stresses too, the fact that a health service is only one aspect of planning at the local level for the welfare of the community, since 'basic requirements in agriculture, education, social betterment, and economic stability must also be considered'.

THE ORGANIZATION OF A LOCAL HEALTH UNIT AND ITS RELATION TO THE INTERMEDIATE AND HIGHER HEALTH AUTHORITIES



PROGRESS IN MALARIA CONTROL

'The Second World Health Assembly resolved to work for the elimination of malaria from the world as a public health problem. At the time, this aim seemed to many to be beyond the possibility of achievement, but a review of the present situation shows that very material progress towards it has been made. This statement is an introduction to the fifth report of the Expert Committee on Malaria,¹ which records this progress and also draws attention to problems still to be solved. Much of the credit for the advances that have been made is attributed by the committee to the efforts of WHO through its demonstration teams, training projects, conferences, fellowships, and stimulation of research.

Malaria control by insecticides

It is pointed out in the report that there is great variety in the doses and frequency of

applications of residual insecticides used in current malaria control spraying and that local experimentation is desirable before undertaking any major control scheme. The main criterion of efficiency of the insecticide is its continued presence on treated surfaces in a form easily picked up and retained by insects that settle on them. Observations concerning specific insecticides and dosages are made, consideration being given to present knowledge—or, in some cases, lack of knowledge—regarding various formulations and their staying properties and effectiveness on certain surfaces. Mud walls which are common in many malarious areas

¹ *W.H.O. High Org. techn. Rep. Ser. 1954 30: 42 pages. Price 1,500 25 or Sw fr 1.—* Published in English and in French.

present special difficulties and are under study.¹ The need for investigation of certain aspects of malaria control is noted—e.g. entomological studies and research on the physical and chemical properties of insecticides their interaction with wall surfaces and their mode of action on insects.

The development of resistance to insecticides by anophelines has been reported in two areas. *A. quadrimaculatus* has developed some resistance to DDT following prolonged larvicidal practice in the USA and *A. sacharovi* has developed resistance after imagocidal work occasionally combined with larvicides in Greece. On the other hand there are many large areas where there has been no apparent development of resistance in malaria vectors despite continued use of residual insecticides for periods of up to eight and nine years. It is concluded in the report that, although this subject merits study the resistance thus far encountered does not constitute an important barrier to malaria control and should not deter governments from undertaking control programmes. However it is stated that accurate measurements of the susceptibility of anophelines to insecticides should be made before and periodically during major control schemes and a suitable technique for assessing susceptibility is described in an annex to the report.

Another interesting and significant development is the reported successful interruption of residual insecticide spraying in British Guiana, Greece and the USA. Experience now clearly shows that the objective of malaria elimination to a degree when routine insecticide application can be ended is a feasible one. It is necessary to establish certain criteria for determining when "full elimination" has been achieved—the end point that makes it possible to discontinue spraying operations. By way of general guidance there is reproduced in an annex

to the report the "criteria of malaria eradication" established by the National Malaria Society of the USA. Once a policy of interruption of spraying activities has been decided upon, it is essential to maintain certain safeguards chiefly to ensure rapid detection of recurrence of malaria and to eliminate it promptly.

Note is taken in the report of the study on the toxicity of pesticides which was made by a WHO consultant and the results of which have been published in the Monograph Series.² Both DDT and BHC are considered safe and new insecticides which laboratory trials have shown to have a toxicity of the general order of these two "may justifiably be brought into routine use with reasonable precautions".

Malaria control by methods other than residual insecticides

Preoccupation with the efficacy of residual insecticides may detract from the necessity to employ other methods under particular circumstances. For example prevention of breeding remains the method of choice for combating malaria carried in some areas by the *Kertes ia* group or by *A. melas* or *A. squasalis*. Environmental sanitation plays an important role particularly when it can eliminate or prevent the creation of breeding places of mosquitos. In addition supplementary measures such as "selective therapeutic schemes" to support imagocidal campaigns may sometimes be desirable.

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¹ Barne J. M. (1953) *Técnicas de feroz e pechile 1* man, Geneva (World Health Organization Monograph Series N. 16).

and is likely to be most useful in prophylaxis especially in mass prophylaxis since the suppressive dose for adults is only 25 mg weekly which makes it relatively inexpensive. Primaquine, which is more effective and less toxic than pentaquine and isopentaquine, has been used with success for the radical cure of vivax infections in troops returning from Korea.

It is noted that the newly synthesized anti-malarials may have special value in malaria control in the following circumstances

(1) where any factor precludes the application of antimosquito measures or renders the response to them unsatisfactory

(2) where residual spraying has been discontinued but there is still need to deal effectively with relapsing cases or infected immigrants or

(3) where malaria has appeared in an epidemic form

A review of the current status of the antimalarial drugs now in use is contained in an annex to the report

Recent scientific developments

The report calls attention to three new scientific developments in malariology: the isolation of *Plasmodium bergheri* and of *P. vinckei* which may aid in the study of

problems of exo-erythrocytic schizogony; immunity, experimental epidemiology and chemotherapy; a new method of chromosome analysis⁴ which may prove valuable in the classification of anophelines, and the observation—in Sardinia, the Pontine Marshes, Greece and the Jordan Valley—of changes in anopheline fauna following successful control, a phenomenon which could have practical implications and which deserves study.

International malaria-control activities

The need for further international co-ordination of malaria control is envisaged since the successful elimination of malaria from one country—which might make possible the interruption of spraying operations—could be jeopardized by lack of comparable control efforts in neighbouring countries and consequent risk of re-infection.

"The ideal to be aimed at is the uniform practice of control throughout all malarious parts of a (WHO) region or throughout large contiguous areas with similar malarious conditions even though they fall into two or more national territories or WHO regions. For this purpose co-ordination of control in method, timing and boundaries would first be necessary while later close integration would be necessary in interruption of control and subsequent practice of safeguards against recurrences."

See Bull. Wld Hlth Org. 1953 4 335

BIOLOGICAL STANDARDIZATION

New international standards have been established and new international units defined by the Expert Committee on Biological Standardization. The report on its seventh session, which has recently been published¹ gives the unitage assigned to one international unit of anti-*Brucella abortus* serum, of aureomycin, of bacitracin and of

dihydrostreptomycin unitage for the international reference preparation for opacity is indicated as well. This publication also contains information on certain standard preparations (anti-Q fever serum, chloramphenicol, oxytetracycline, avian PPD and anti-Rh₀ (anti-D) blood typing serum) on the replacement of standards or of reference preparations and on progress in work on diphtheria, toxoids, pertussis vaccine, antirabies

¹ Wld Hlth Org. techn. Rep. Ser. 1954 86 2 pages. Price 1/9 0/25 or Sw fr 1.—Published in English and in French.

vaccine cholera sera and vaccines certain hormones and sera from syphilitic donors. Accelerated degradation tests for stability of standard preparations are going to be actively studied.

The committee considered a resolution of the 15th International Veterinary Congress that it should extend its activities relative to international standards for veterinary

substances. In addition because of the increasing importance of international standards in medicine and public health the committee formulated precise suggestions concerning the status and functions of National Control Centres and proposed that they be called "National Laboratories for Biological Standards".

FIRST INTERNATIONAL CONFERENCE OF NATIONAL COMMITTEES ON VITAL AND HEALTH STATISTICS

The report of the First International Conference of National Committees on Vital and Health Statistics has been published in the *World Health Organization Technical Report Series*¹. This conference which has been the subject of a previous *Chronicle* article² "reviewed the antecedents objectives patterns of organization and programmes of work carried out by the national committees on vital and health statistics or equivalent bodies and discussed the progress already made and the possibilities for their work and the important role which they might play for the development of vital and health statistics".

In the conference report are considered separately the type of vital and health statistics which would be of the greatest practical value to areas in different degrees of development with regard to health and administrative services. These areas are classified in three groups: (a) those with highly developed health and statistical services; (b) those with underdeveloped health and statistical services; and (c) those in an intermediate stage of development or of unequal development. Specific recommendations and

suggestions are made for the statistics of each of these three groups.

One major section of the report outlines methods of improving the quality of health statistics. For example the possible advantages of applying modern sampling techniques on a wider scale are noted. Such techniques "cannot be expected to solve all the problems of vital and health statistics" but "nevertheless offer a means of obtaining reliable statistical information in many cases more cheaply and more quickly than by conventional methods". Attention is drawn to the importance of giving instructions to medical practitioners on the proper certification of death of training personnel for statistical work and of securing wider appreciation by the medical profession for various types of vital and health statistics. The activities of the WHO Centre for Classification of Diseases are briefly reviewed.

The final section of the report is devoted to the subject of implementation of international regulations or recommendations such as WHO Regulations No. 1³ and WHO definitions of "live birth" and "foetal death"⁴. The United Nations document

¹ *Wld Hlth Org J. An. R. p. Ser.* 1954, 85, 22 pages. Price 1'9 \$0.25. Sw. f. 1.— Published in English and in French.
² *Chron. Wld Hlth Org.* 1954, 8, 7.

³ *Off. Rec. Wld Hlth Org.* 13, 349.

⁴ *Wld Hlth Org J. An. R. p. Ser.* 1950, 25, 13.

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Review of WHO Publications

LABORATORY TECHNIQUES IN RABIES

Among the publications recently issued by WHO is a monograph containing a number of contributions by distinguished research workers on various aspects of laboratory techniques in rabies¹. The following slightly altered version of the foreword to this manual gives an idea of its contents.

The World Health Organization has in the past received many requests for information on laboratory techniques connected with various aspects of rabies. As a result of the need for this kind of information in countries of the Eastern Mediterranean, South East Asia and Western Pacific Regions of WHO, a meeting was organized for these countries in July 1952 at the Pasteur Institute of Southern India in Coonoor. The meeting provided for lectures, discussions, demonstrations and laboratory training and was attended by 55 medical and veterinary officials including 7 discussion leaders from 23 different countries. WHO consultants on rabies acted as discussion leaders and supervised the laboratory session. The working papers, in particular the laboratory instructions prepared by well known authorities, proved most useful, and it was decided to expand and revise the material for publication. The WHO Expert Committee on Rabies at its second session in Rome in September 1953 discussed the projected manual in detail and made frequent references to it in its report. The reports of the committee deal in general with the overall problems encountered in rabies including prophylaxis in human beings and control

in animals, whereas this publication is concerned solely with laboratory aspects of the disease.

The manual is not intended as an exhaustive treatise; its scope has been purposely limited to one or two procedures in each of the major divisions of laboratory techniques in rabies. The contributors were requested to select and present procedures based on their own experience which would be dependable and practicable without sacrificing necessary minimal standards, but which at the same time could be adapted to the limited facilities and personnel of many rabies laboratories in different parts of the world. The techniques were selected also with a view to encouraging and facilitating uniform methods which would permit of a more valid comparison of results obtained in different laboratories.

Certain features of the various sections require some explanation.

Detection of Negri bodies by rapid techniques is the aim of every diagnostic laboratory dealing with rabies, and a choice must be made from a multiplicity of methods described by different authorities. It is believed that the impression method presented here can be mastered relatively easily by most laboratory technicians. Where histopathological sections are concerned, more specialized training in pathology is required and this part of the manual has been arranged for such trained individuals.

In the laboratory diagnosis of rabies, examination is frequently limited to the tissues of the central nervous system and the salivary glands are entirely overlooked. It has been aptly stated that "animals do not bite with their brains"—the real risk of contracting rabies is dependent on whether or not virus is present in the saliva of a biting

¹ W. H. O. J. 37, 1954. The Organization (1954) *Laboratory techniques in the Genes* (World Health Organization Monograph Series 37) 140 p. Price 10 \$1.50 Sw. f. 6.— French edition in preparation.

*Principles for a vital statistics system*⁵ is endorsed as an aid to countries now in

⁵ United Nations Department of Economic Affairs Statistical Office (1953) *Principles for a vital statistics system. Recommendations for the improvement and standardization of vital statistics* New York (Document ST/STAT/SER/M/19)

process of organizing or reorganizing their vital statistics system as well as to countries appraising their systems with a view to improving the quality and comparability of their existing statistics

DRUGS LIABLE TO PRODUCE ADDICTION

In its most recent report¹ the WHO Expert Committee on Drugs Liable to Produce Addiction specifies several new synthetic substances that should be considered addiction producing drugs and controlled accordingly. Nallynormorphine (nalorphine), on the other hand cannot be considered as addiction producing or capable of being converted into an addiction producing drug. It seems important that there should be no restrictions in obtaining this drug, which is the most potent and safe antidote against acute poisoning with morphine and related drugs. Dextrorphan and dextromethorphan should also be exempted from the obligations of the international conventions on narcotic drugs, because it has been proved that contrary to their laevogyre isomer and racemic form they are neither addiction producing nor convertible into such a sub-

stance. This recommendation is of fundamental character since it is the first time that a substance formerly put under international control according to the 1948 Protocol has later been exempted.

Among other conclusions reached by the committee and recorded in this report are that there should be no relaxation in the control of codeine or of ethylmorphine in view of the possibility of their conversion into morphine. That morphine retard preparations must be handled and controlled exactly as are other preparations of morphine and that control over amphetamine and its derivatives should be strengthened on the national level. It is recommended that the procedure of characterizing morphine and related alkaloids on the basis of the phenanthrene nucleus be continued.

An annex to the committee's report contains a list of proposed international non-proprietary names for addiction producing drugs under international control.

¹ *Wld Hlth Org. techn. Rep. Ser. 1154* 76 11 pages. Price 1/9 \$0.75 or Sw fr 1.— Published in English and in French

League of Nations Health Publications Available

Certain publications of the Health Organization of the League of Nations are available free of charge to university and medical libraries willing to pay the cost of mailing. A list of these publications may be obtained upon application to: Distribution & Sales Unit, World Health Organization, Palais des Nations, Geneva, Switzerland.

Work with viruses is a highly developed discipline which permits of little latitude if reproducible results are to be obtained. However it is to be expected that the opinion of individual workers on techniques will differ with respect to details. The techniques recommended have been prepared for particular application in rabies work although it is evident that some of them, such as the serum virus neutralization test and the mouse inoculation test are readily applicable perhaps with slight modifications to other virus diseases. It will be noted further that in describing the various techniques a rational and systematic approach has been stressed by the contributors so that errors which might otherwise nullify excellent work may be avoided. An example which may be cited is the advisability of challenging vaccinated animals before or alternately with control animals in determining the potency or effectiveness of a vaccine.

Rabies research is far from static and it is to be expected that modifications of some of the procedures described will be evolved in the rather near future. It is felt however that the techniques given in this manual should be suitable for several years to come as they are the result of extensive and proven experience.

The contributors to the first part of the manual on laboratory diagnosis are H. N. Johnson, J. Koprowski, P. Lepine, T. F. Sellers and E. S. Tierkel; to the second part on methods of vaccine production R. Bequignon, K. Habel, M. M. Kaplan, A. Komarov and P. Lepine; to the third part, on vaccine potency tests R. Bequignon, K. Habel, G. A. Hottel, M. M. Kaplan and C. Vialat; to the fourth part on the production of hyperimmune serum P. Atanasiu, D. D. Antona, E. Falchetti, H. Koprowski and P. Lepine. H. N. Johnson contributed the fifth part on the breeding and care of laboratory animals.

CONTROL OF CEREBROSPINAL MENINGITIS EPIDEMICS

A recent number of the *Bulletin of the World Health Organization* contains a report on an experiment in mass chemoprophylaxis of cerebrospinal meningitis in the Sudan.¹ This report by Drs A. Macchiavello and Wasfy Omar of the WHO Regional Office for the Eastern Mediterranean and Drs M. Amin El Sayed and Khalil Abdel Rahman of the Sudan Medical Service Ministry of Health Sudan shows the efficacy of sulfonamides or penicillin in controlling epidemics of cerebrospinal meningitis. A resume of the article follows.

Epidemics of cerebrospinal meningitis have been reported in the Sudan since the end of

the last century. From 1949—when the last epidemic cycle started—until 1952, 60 000 cases had been reported.

In the past decade the fatality rate from cerebrospinal meningitis in the Sudan has decreased from 60-75% to about 10% thanks to the widespread use of sulfa drugs. However from the medical administrative point of view this disease remains one of the most pressing public health problems. Mass prophylaxis with sulfa drugs has given satisfactory results in closed communities such as army camps, schools and factories, but its effectiveness in protecting large cities or scattered rural populations has not yet been proven.

The role of penicillin in the treatment of cerebrospinal fever is uncertain. Sulfon-

animal. However, salivary excretion of virus does not occur in an appreciable but unpredictable, number of cases where virus can be recovered or detected in the brain of the same animal. Examination of the submaxillary salivary gland for the presence of virus by mouse inoculation should therefore be carried out wherever possible concurrently with nervous tissue examination.

The necessity for mouse inoculation tests in routine diagnosis is worthy of special emphasis. Careful studies have shown that up to 20% of animals negative on examination for Negri bodies were positive for rabies by the mouse inoculation test.

A description of the preparation of the Semple phenolized type of vaccine, as representative of the most widely used of the killed vaccines is given. This does not imply that other inactivated or living virus vaccines such as the Hempt, Högyes, Fermi, or Harris type vaccines, to name a few, are not equally effective, provided they are adequately tested for potency. Two methods for producing the Semple type vaccine are given: one according to the procedure used at the Institut Pasteur Paris and the other to meet the requirements of the National Institutes of Health of the United States of America. These methods were chosen because they cover the largest number of requests for information received by WHO. It is recognized that modifications of these methods are used successfully in many countries.

Descriptions of the production of ultra violet light inactivated vaccine and modified virus vaccine prepared from chicken embryos are included because of wide interest in these effective and relatively new products. Commercial or large scale preparation of potent rabies vaccines from which the paralysis producing factor has been removed has not as yet, been successfully accomplished and this procedure is therefore omitted from the manual.

The necessity for performing potency tests on each batch of vaccine cannot be too strongly emphasized for ample experience has shown that even when routine procedures are closely followed in the preparation of successive batches of vaccine there is no automatic assurance of a potent product. Potency tests in laboratory animals provide our only basis, at present for any degree of certainty that a vaccine possesses sufficient immunogenicity to give dependable results in human beings or animals. Several potency tests of varying complexity are given so that a laboratory may select or devise one most suitable to its local conditions and facilities. In the latter instance strongest consideration should be given to vaccination followed by challenge with street virus always with an adequate number of control animals. For this purpose dogs are suitable and can be considered as the animal of choice. The important factor to be demonstrated in control tests of rabies vaccines is immunogenicity and not merely innocuity, a mistake which is not uncommon.

Hyperimmune serum is a promising addition to rabies prophylaxis in man and animals: one part of the manual is devoted to a description of its preparation and of potency tests. Laboratory investigations on hyperimmune serum now under way, co-ordinated by WHO should give us more information within the next year or two on its prophylactic value.

Another part is devoted to some of the more important problems associated with the use in rabies work of small laboratory animals, a frequent source of difficulty in many countries. The section is necessarily brief and touches on only the chief aspects of the subject, in particular diseases encountered in these animals which might affect experimental results. Further information on this topic, and on material dealt with elsewhere in the manual may be obtained from the additional reference sources given.

lactic drugs used seem to be of equal efficacy. Penicillin and the sulfonamides can complement each other—one can replace the other in cases in which the meningococcus develops resistance to the first drug used or if the

epidemic recurs. PAM seems to be less expensive than the sulfonamides. But from a purely scientific point of view it would appear that sulfa drugs given in the proper doses can give good results.

Snakebite Mortality in the World

To what extent is the mortality from snakebite really a world problem? How many persons are bitten by snakes in different parts of the world and how many of them die?

An attempt to answer these questions has been made in a study¹ recently published by the World Health Organization. This study throws light on the geographical distribution of snakebite mortality in individual countries and also refers to the predominant species of poisonous snakes incriminated. Reliable statistical information on the number of deaths caused by snakebite is not available from large parts of the world and especially from those so-called underdeveloped areas where snakebite is of relatively greater importance but where the system of registration of causes of death is unsatisfactory. As a matter of fact in many such areas deaths from snakebite occurring in remote villages and jungles are hardly registered; the only information available is that in relation to cases treated in hospitals or rural medical institutions. Another difficulty in making a correct evaluation of the problem arises from the fact that in the majority of countries snakebite deaths are not separately tabulated in official returns; only totals under such vague headings as "attacks by venomous animals and insects etc." are shown.

Since the available statistical data are known to be unreliable, only approximate and highly conservative estimates of the

relative magnitude of the problem of mortality from snakebite have been made.

The total population of the countries which possess national systems for vital statistics registration and for which snakebite mortality data comparable to the population exposed to risk are available is 1 122 million. On the basis of this figure the total number of snakebite deaths in the world (excluding China, the USSR and central European countries) is estimated to range between 30 000 and 40 000 annually. Of this total the highest figures are those for Asia (25 000–35 000) followed by South America (3 000–4 000). North America (including Mexico), Europe and Oceania all record relatively low figures—300–500, 50 and 10 respectively. For Africa however it is difficult to make even an approximate estimate, but it is thought that the annual total of snakebite deaths is around 400–1 000.

An estimate of the total cases of snakebite is even more difficult to make, but if a guess is to be ventured it may be stated that about half a million persons are bitten annually by poisonous and non-poisonous snakes.

The analysis of snakebite mortality figures has revealed two interesting features: first, that considerable variation exists from one area to another; and secondly, that high rates are generally found in topographically similar areas, presumably because of the preponderance of certain species of snake in that habitat.

The largest number of deaths is reported from India, but if proper allowance is made for the size of the population, it is observed

¹ Swaroop S. & G. D. B. (1954) *Bull. Wld. H. A. Org.* 10: 35

amides are still considered the drugs of choice and penicillin is not commonly recommended for general use as a therapeutic agent

The results obtained by the authors show that mass chemoprophylaxis either with sulfa drugs or with penicillin is effective in controlling cerebrospinal meningitis epidemics in rural communities, and that the methods that they worked out may under routine procedures of health administration, be easily applied, even under the most primitive living conditions, such as those in the Nuba Mountains of the Sudan where their experiments were carried out

Sulfadimidine (trade name Sulphamezathine) was selected as the mass prophylactic agent because of its rapid absorption, the high, early peak blood level obtained, the facility with which it diffuses into the cerebrospinal fluid reaching a concentration approximating half that of the blood level, its low toxicity, the rapidity of excretion, its relatively low price, and the fact that the Sudan Medical Service had a considerable quantity at its disposal. The possible drawbacks that this drug may have when given in a single dose disappear when it is administered in repeated doses.

Penicillin in the form of PAM and given in a dose of 150 000 units to adults, has an effect comparable to that of a single 4 g dose of sulfadimidine. The fact that penicillin does not pass through the meninges—or at least very little—is immaterial in mass chemoprophylaxis since those being dealt with are meningococcus carriers rather than cerebrospinal meningitis cases.

The experiment proved that it is possible for a team of four medically qualified persons and five trained assistant dressers to deal with 4,000 persons per day. The responsibility for assembling the people for treatment was entrusted to the tribal authorities and was accomplished most efficiently.

The prophylaxis consisted of the oral administration of sulfonamides in the form

of tablets of 0.5 g—adults being given 40 g, children 5–15 years of age 2.5 g, and infants under 5 years old 1.5 g—or of penicillin (PAM)—the respective dosages being 150 000, 100 000, and 75 000 units for the same population groups.

In a community of 10 394 inhabitants where 293 cases of meningitis had been reported before the experiment began, 5350 inhabitants were given prophylaxis. Observations made during six weeks showed that the epidemic continued its course but that in the group protected by sulfonamides or penicillin the incidence of the disease was 4.86 per 1,000 persons as compared with 17.68 per 1,000 in the unprotected group—a statistically significant difference. Six weeks after the application of the prophylactic measures the treated groups, although living in close contact with the unprotected groups, had not been reinfected. Since chemotherapy has no immunizing power by itself, the authors submit the hypothesis that a low grade immunity can be developed in individuals who were carriers before prophylaxis was administered.

The authors discuss the various factors which enter into the development of epidemics and which must be taken into consideration in evaluating the results of a prophylactic campaign. They stress the fact that the percentage incidence of cases of typical cerebrospinal meningitis may be considered as an expression of the virulence or the invasive power of *N. meningitidis* but not as a measure of the rate of dispersion of the infection. This means that in communities where only a few cases of meningitis are reported there may actually be a wide spread epidemic of unapparent infection.

Although they may be somewhat difficult to evaluate, the results of the campaign described are not due to chance and they encourage the extension of the method outlined to prevent the spread of epidemics of cerebrospinal meningitis. The two prophyl

terrestrial snakes and are responsible for practically all the snakebite deaths in the country

In the countries of Central and South America the common genera of poisonous snakes are *Crotalus* and *Bothrops*

The African continent has a wide variety of poisonous snakes of which the cobras and vipers are the most widely distributed and are responsible for the largest number of deaths. Several species of the dangerous mambas are also present

Since poisonous snakes are not generally found in cold climates the mortality from snakebite is very low in countries of North America and Europe. Land-dwelling poi-

sonous snakes are not found in the Polynesian Islands, Madagascar, New Zealand, the Azores, the Canary and Cape Verde Islands or (with the exception of Martinique, St. Lucia, Tobago and Trinidad) the West Indies. Thus they do not occur in Haiti, Cuba, Jamaica and Puerto Rico. They are also absent in Ireland, Iceland, the Orkneys and the Shetlands.

The incidence of snakebite mortality depends of course on the chance of a person's being bitten by a poisonous snake which naturally is related to the number of prevalent poisonous species of snake and other factors which would contribute to the individual's coming into contact with them.

ENVIRONMENTAL SANITATION

The latest issue of the *Bulletin of the World Health Organization*¹ is devoted to the subject of environmental sanitation, the papers published therein being among those submitted to the WHO expert committee on this subject or presented at European seminars on sanitary engineering. Some of the former selections have already been summarized in the *Chronicle*² (e.g. those by M. Derryberry, M. D. Hollis, L. Pachón Rojas and W. R. Sanchez and E. G. Wagner). The background information for this special *Bulletin* and comments on a number of the other articles which it contains are found in the following introduction.

The importance of environmental sanitation as an ally of other branches of public health in the control of preventable diseases is now recognized by health officials in most parts of the world. During the past few years many governments have taken steps to create environmental-sanitation services within their administrative machinery and to train qualified personnel to carry out sanitation work. This move-

ment to which WHO is contributing largely is gaining increasing momentum, especially in the underdeveloped regions of the world where the bulk of the population lives under rural conditions.

It is generally agreed that the principles of sanitation apply to both urban and rural problems, although the conditions encountered may differ widely in kind and in complexity. Even in the more advanced countries health and sanitation services in rural areas have generally lagged behind those in urban areas. In recent years there has been increasing pressure, particularly in the underdeveloped nations, for bettering the rural sanitary environment. In July 1953 the Expert Committee on Environmental Sanitation of WHO met to study sanitation problems of rural areas and small communities and to make recommendations for improvements applicable in most parts of the world.³

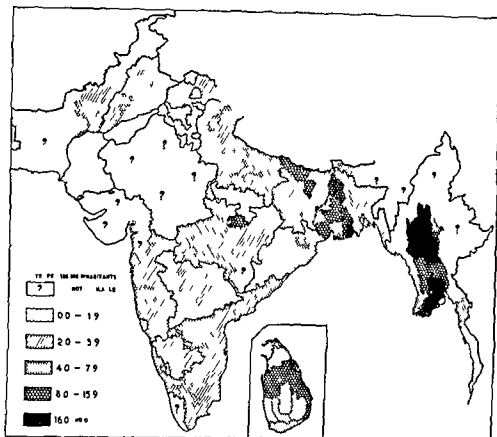
Since November 1950 there have also been three seminars for European sanitary engineers sponsored by the WHO Regional Office for Europe and covering an extremely wide range of subjects. The first held in 1950 in The Hague was attended by representatives from 16 countries who submitted reports on sanitary-engineering practices and problems in those countries. The second seminar held in Rome in

¹ B O Wld Hlth Org 1954 10 N 2

² Chron. Wld Hlth Org 1954 8 13

³ Wld Hlth Org J An R P Ser 1954 77 se also Chron Wld Hlth Org 1954 8 146

FIG 3 DISTRIBUTION OF FIVE YEAR AVERAGE SNAKEBITE MORTALITY RATES IN BURMA, CEYLON, INDIA, AND PAKISTAN *



* The period to which these average rates relate varies to some extent in different areas depending on the availability of the data. Thus in the case of Ceylon India and Pakistan the quinquennium covered ends during the period 1949-52 while the Burma figures are for the quinquennium 1936-40. For Burma India and Pakistan the distribution is shown by districts and for Ceylon by provinces.

that the highest snakebite mortality rate is recorded in Burma where in some districts the annual death rate from snakebite exceeds 30 per 100 000 population. The above map, showing the distribution of snakebite mortality in Burma, Ceylon, India and Pakistan, indicates that the districts in Burma showing highest mortality from snakebite are those situated in the low lying areas of the Irrawaddy and Chindwin Rivers.

Although poisonous sea snakes are found in the Bay of Bengal and may come up the rivers with the flood tides it is believed that they do not constitute a great hazard

to man. Cobras, vipers or kraits are the terrestrial snakes widely prevalent in Burma and they largely account for the mortality. The same species of snakes are the ones most dangerous in Ceylon.

The region of highest snakebite mortality in India lies in West Bengal in the delta of the Ganges. It is noteworthy that the neighbouring districts along the Bramaputra river even in its deltaic region do not show such a high snakebite mortality rate as do the districts lying in the Ganges delta. In India cobras, kraits, Russell's viper and *Echis* are the commonest types of poisonous

STATISTICAL STUDY ON INFANT MORTALITY

A sharp decline in infant mortality in many countries is recorded in a number of the *Epidemiological and Vital Statistics Report*¹

TABLE I INFANT MORTALITY 1900-52 DEATHS OF INFANTS UNDER ONE YEAR OF AGE PER 1 000 LIVE BIRTHS IN SAME YEAR

Countries	1901-05	1921-5	1952
Australia	97	—	24
Belgium	148	—	35
Canada	—	98	33
Ceylon	171	—	75
Chile	264	—	134
Denmark	119	—	29
England and Wales	138	—	27
Finland	131	—	37
France	139	—	41
India	—	206	115 (1951)
Ireland	94	—	41
Israel	—	126	39
Italy	167	—	64
Malta	—	270	72
Malibus	—	142	61
Netherlands	136	—	23
New Zealand	75	—	84
Northern Ireland	103	—	33
Portugal	144	—	94
Scotland	170	—	35
Spain	172	—	54
Sweden	91	—	20
Switzerland	134	—	79
USA	—	74	29

TABLE II PERCENTAGE DECREASE IN INFANT MORTALITY

Countries	Between 1901-05 and 1921-5	Between 1921-5 and 1952	Between 1901-05 and 1952
Australia	41	58	71
Belgium	31	58	71
Denmark	31	64	76
England and Wales	45	64	80
Finland	27	67	78
France	32	57	71
Ireland	76	41	58
Italy	24	50	62
Netherlands	49	67	83
New Zealand	43	49	71
Northern Ireland	24	2	64
Norway	35	50	68
Scotland	23	67	71
Spain	17	62	69
Sweden	34	67	78
Switzerland	51	55	78

in which statistics for thirty countries and territories for the period 1900-53 are presented. In 1900 the infant death rate varied from 264 per 1 000 live births in Chile to 75 in New Zealand today some countries have an infant death rate of between 20 and 30 per 1 000 live births and an average reduction of 70% to 80% has been experienced in the countries studied in the report.

The accompanying tables give an indication of this downward trend in infant mortality in some of the countries for which data are available.

¹ *Epidemiol. and Statist. Rep.* 1954 7: 1

1951 was limited to fewer subjects and more time was devoted to discussions and an exchange of views on problems in the different countries. The third was held in London in 1952 and the participants considered a problem of great interest and concern in many European countries—the treatment and disposal of domestic sewage from small groups of houses and isolated dwellings. As an outgrowth of the discussions at this seminar WHO published in 1953 a monograph entitled *Design and operation of septic tanks*⁴ in which recent developments and applied research are discussed.

In [one of the papers in this number of the *Bulletin*] K. E. Jensen draws attention to the risk of infection from the presence of tubercle bacilli in sewage from towns with tuberculosis sanatoria.

The health hazards accompanying the utilization of sewage in agriculture are discussed by G. Mazzetti, who concludes that the risks can be minimized

though not eliminated by modern methods of sewage treatment. Many small towns and parts of large cities have found it practical and economical to dispose of their sewage by putting it to agricultural use but few have so far taken adequate steps to safeguard the health both of the farmer and of the urban consumer of raw vegetables produced on sewage irrigated land. M. Petrik reviews the agricultural use of night soil, sewage and sewage sludge from the purely agricultural point of view as well as from the sanitarian's. He reviews a number of studies and experiments made in many countries of the world but concludes that the chemistry, biology and bacteriology of the various methods of treatment and use of waste matter need further investigation.

F. B. Sentenac discusses in an informative paper the vexed problem of financing sanitary works, showing how a number of countries have solved it or have tried to solve it and putting forward a number of constructive suggestions.

Finally some 16 shorter contributions dealing with various aspects of environmental sanitation have been included in the section *Notes and Reports*.

⁴ World Health Organization (1953) *Design and operation of septic tanks*. Geneva (World Health Organization Monograph Series No. 18).

Obituary

MARCEL WANSON

Information has just been received of the death which took place suddenly at Berchem Antwerp of Dr. Marcel Wanson, former Deputy Chief Medical Officer of the Belgian Congo, Professor at the Institute of Tropical Medicine, Antwerp, lecturer at the Université libre Brussels, and member of the Royal Belgian Colonial Institute.

Dr. Wanson was born in 1905 and spent from 1932 until after the war as a public health officer engaged in the study of various problems of tropical medicine, notably the insect-borne diseases. Filariasis and especially onchocerciasis earned his particular attention, and through his work in this field he became recognized as one of the most eminent specialists of our time. His brilliant success in the control of *Simulium*, the vector of onchocerciasis in the Leopoldville region, was one of the first demonstrations of control of this disease which is a great social problem in many areas of tropical Africa and America.

Keenly interested in the latest scientific achievements and always ready to share his invaluable knowledge, Professor Wanson attended several international congresses of tropical medicine and since 13 December 1951 his collaboration with WHO as member of the Expert Advisory Panel on Parasitic Diseases had been greatly appreciated. His profound knowledge and experience contributed in large measure to the success of the first session of the newly formed Expert Committee on Onchocerciasis organized in November-December 1953 by WHO in Mexico at which he acted as chairman. The part he took in drafting the report of this committee may well have been the last work of this outstanding scientist through whose untimely demise medicine the world over has suffered an irreparable loss.

it is believed, because of the waning prevalence of malaria.

Environmental Sanitation Projects

Burma

In February 1954 WHO signed an agreement with the Government of the Union of Burma for assistance in strengthening the country's environmental sanitation services. WHO aid will be concentrated particularly on training sanitarians and health assistants. The Government has recently established a Division of Environmental Sanitation in the Office of Health Services at Rangoon and two Burmese engineers who were trained abroad have returned to direct this Division. WHO is providing the services of a public health engineer for this project. UNICEF is also aiding, through the provision of supplies and equipment for use in the training areas.

Egypt

As part of the bilharziasis-control project which is going forward in Egypt a survey was made of excreta disposal facilities in the five principal villages of the project area. Nearly 700 houses were inspected and it was found that 445 had bored hole latrines, 150 pit latrines and the rest no facilities at all. The pit latrines were considered superior since 63 of the bored hole latrines were not in working condition.

Training Course in Brucellosis

A training course in the control of brucellosis for the Caribbean area was held in Mexico City from 1 to 13 March 1954. Veterinarians, bacteriologists and other specialists from Costa Rica, Cuba, the Dominican Republic, El Salvador, Guatemala, Haiti, Jamaica, Mexico, Nicaragua, Panama and Trinidad attended this course which had as its aim the demonstration of modern techniques in the diagnosis of brucellosis and the promotion of uniformity of methods.

The course was sponsored by the Government of Mexico with WHO assistance in the form of provision of fellowships, the services of consultants lent by the US Public Health Service, equipment and teaching materials and secretarial and translation services.

Dr Berthet Heads International Children's Centre

Dr Etienne Berthet who was WHO tuberculosis consultant in Turkey and, more recently in Syria,¹ has been named Director-General of the International Children's Centre in Paris. The Centre which was established in 1949 by the French Government in co-operation with UNICEF is concerned with teaching research, and various types of studies on medico-social problems affecting children. Dr Berthet assumed his post at the Centre in May.

Eighth Session of the United Nations Statistical Commission

The United Nations Statistical Commission held its eighth session in Geneva from 5 to 22 April 1954. The subjects covered although very largely of an economic nature included some health aspects, and representatives from the World Health Organization were accordingly invited.

The documentation presented included a review of international statistics existing in the social field, covering not only vital and health statistics proper but also statistics of a number of factors influencing public health such as housing, nutrition, education etc. It included also a report on the definition and evaluation of levels of living. It is noteworthy that two Specialized Agencies having participated in the preparation of the report placed health indices at the top of the list of indicators of levels of living.

No technical discussion took place on the indicators of health or on the factors of health, these being left for the consideration of the WHO Expert Committee on Health Statistics.

While the meeting illustrated the co-operation existing between the statistical services of the United Nations and of the Specialized Agencies, the documentation prepared with the latter's collaboration will constitute, when in its final form, a valuable key to existing statistical material relating to factors influencing health and will therefore be of interest to the hygienist and the sociologist.

¹ See CH on WHH h Org 1944, 6, 135, 1953, 7, 36.

Notes and News

Eye Diseases among Arab Refugees

During 1953, an attempt was made to study the occurrence and possible causes of acute conjunctivitis and trachoma at the Anjar camp for Arab refugees. Nearly half of the camp's population of 1 923 persons is made up of children under 15 years of age.

It was noted that the prevalence of eye infections increased steadily from April to October i.e., during summer the maximum being 36 7% of the camp population. Observations made during this period of high prevalence suggested two possible modes of transmission—flies and fingers—the latter by reason of rubbing the eyes because of dust irritation resulting from wind. Control measures which were undertaken included better disposal of garbage manure and excreta, spraying fly breeding and fly attractive areas with 4% chlordane in oil and practical lessons in personal hygiene among schoolchildren.

Tuberculosis Centre in Patna

An international team which aided in the establishment of a tuberculosis control and demonstration centre in Patna, Bihar State, India, completed its assignment at the end of 1953. The centre was set up with WHO technical advice and was financed in part by United Nations Technical Assistance funds. UNICEF provided substantial amounts of supplies and equipment. The centre is located in a spacious modern building where 300 patients daily can be given complete examination for tuberculosis. It is meant to serve as a nucleus for further expansion of tuberculosis-control activities throughout the State.

Since its official opening in September 1952, nearly 50 000 persons have been examined at the centre. In addition, training has been given to professional personnel. 14 graduate nurses from various parts of India took a three-month special course during the last quarter of 1953, and earlier 25 physicians had attended a postgraduate course in tuberculosis control which was arranged by members of the WHO team and their national counterparts. Numerous lectures and conferences have been given at the centre and in local hospitals and training institutions in Patna.

Dr B. K. Bannerjee is Director of the centre. From March 1952 to October 1953 the international staff was under the direction of Dr F. Ivaldy, who is now on a new assignment for the Organization in Ceylon. Upon the departure of Dr Ivaldy, Dr R. Neumann

epidemiologist of the WHO team served as acting senior adviser until the international staff withdrew. He and the WHO public health nurse Miss Mary O'Connell have now been re-assigned to a WHO-assisted tuberculosis project in Kabul, Afghanistan.

Tuberculosis Diagnostic Laboratory Opened in Cairo

A completely modern laboratory for the diagnosis of tuberculosis was opened in Cairo on 20 April 1954. This laboratory, a project of the Egyptian Government, has been established with aid from WHO and the Technical Assistance programme. In addition to providing equipment for the laboratory, the Organization recruited Miss B. Eichhoff, a laboratory technician, who is assisting in setting up the equipment and training the staff.

Malaria Control in Afghanistan

According to a report submitted jointly by the WHO Senior Malaria Adviser in Afghanistan, Dr S. L. Dhir, and the President of Afghanistan's National Malaria Organization, Dr Abdul Rahim, four years of intensive antimalaria operations undertaken by the Government with the assistance of WHO and UNICEF have resulted in successful control of the disease among approximately two-thirds of the total malarious population of the country. Plans have been drawn up for further expansion of malaria control: new areas with a population of about 580 000 are expected to be covered during 1954 and 1955 and this expanded programme should virtually rid the country of malaria.

Particularly significant are the economic benefits already evident as a result of the successful control of malaria. For example, in the town of Pulikhumri, where there are textile mills, the total population had been only about 5 000 and production of textiles had suffered considerably. Now, owing to improvement in health conditions, the population has increased to around 20 000 and the output of the mills has almost doubled. A similar benefit has been noted in agricultural areas. In Kataghan Province, which was notorious for prevalence of malaria, large tracts of land have been brought under cultivation since the beginning of antimalaria operations in 1950 and the annual yield of the rice and cotton crops in the districts of Kunduz and Khanabad has been practically doubled during the past three years—mainly

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See Chron. Wld Hlth Org 1954, 6: 133 1953 7: 236.

World Health Problems

An appreciation of the work of WHO appears in *International Conciliation* for May 1953. Sir Arcot Mudaliar writes

It may be said that no organization has created a better impression nor given more confidence to the peoples of the world than the World Health Organization—by the effectiveness of its program by the manner in which it has always kept the international outlook in the forefront and by the unflinching discharge of those duties with which it has been charged. All the world over the 7th of April is observed as World Health Day and in undeveloped and underdeveloped countries as well as in more progressive countries this day is observed as a special day when the thanks of the people concerned are given to this great international organization. Writing on World Health Day in its issue of 7 April 1953 a leading daily of India states

"The World Health Organization never attempts to be a fairy godmother solving all public health problems of under-developed nations. Its assistance is given only when asked for by the Governments concerned and its aim is to afford opportunities for such administrations to help themselves. In India anti-malarial campaigns undertaken with World Health Organization assistance have been successful. There has been an increase in the population of the Terai region and the area under cultivation has gone up by forty thousand acres. Equally striking successes are claimed in the eradication of malaria in some of the most deadly hotbeds of this disease in Burma. In the battle against tuberculosis the World Health Organization helps in the training of doctors, nurses, home visitors and X-ray technicians. While there may be some argument regarding the usefulness and efficacy of other types of technical assistance extended to under-developed countries there cannot be two opinions about the usefulness of the humanitarian and nation building activities of bodies like the World Health Organization and the United Nations International Children's Emergency Fund.

International Co-operation

In the June 1953 number of *Public Health Reports* Dr Hyde, Chief of the US Public Health Service's Division of International Health, writes of the nature and functions of WHO. The following extract from his article shows the ways in which WHO co-operates

with other international organizations in the promotion of world health.

"The World Health Organization is not working alone. Rather it is the coordinating force in a complicated structure of many agencies. Under its constitution it is the coordinating and directing authority in international health work.

"There are a number of agencies concerned with various aspects of world health: United Nations International Children's Emergency Fund, United Nations Educational, Scientific and Cultural Organization (UNESCO), the Food and Agricultural Organization (FAO), the Technical Cooperation Administration (TCA), the Mutual Security Administration (MSA), the Colombo Plan, private agencies and foundations, industry, churches and others. Each has its special motivation, its special drives, its own resources, its special values.

"The job of the World Health Organization is not, as some have proposed, to stand alone and do the whole job of international health. Rather its job is to mobilize the great forces that are available to give the lead to us all.

It is doing this. It is increasingly setting the sights for all agencies, pointing up opportunities for social and economic advancement through health improvement. It has brought about jointness of operation in the place of what could have been duplication and waste. Examples of its coordinating activity are found in joint committees with FAO, ILO (International Labour Organisation) and UNICEF and in the holding of coordinating conferences among the operating staffs of the various agencies in the field of health. Such conferences have been held at the country level. They are held regularly in certain regions and have been held at the world level in Geneva.

In health it is fair to say that under the leadership of the World Health Organization the various national and international programs have become in a very real sense a single, unified movement with a common goal and common methods of attaining that goal.

WHO's Mass Treatment Campaigns

Describing fifty years of international work in the field of venereal disease control (*Public Health Reports*, August 1953), Dr T. J. Bauer, medical officer in charge of the Communicable Disease Center, Atlanta, Ga., comments on the experience gained from WHO's mass treatment campaigns.

"One of the most significant undertakings of WHO in treponemal disease control in terms of

permanent progress is the training phase of the program. Personnel are being indoctrinated in essentials of public health practice which will serve both specialized treponemal disease campaigns and generalized health programs. For the private physician in contact with epidemiological and treatment demonstrations there is opportunity to learn some of the attitudes and substance of preventive medicine—particularly important in areas where physicians receive little of these in their medical training.

Towering above all other results, real or potential of international treponemal and venereal disease control is the prospect that the massive prevalence of these diseases may be cut down and possibly eradicated in large areas. Both in terms of humanitarian objectives and of economic improvement of the areas involved, this prospect has very broad ramifications indeed.

It has been pointed out that treatment alone has never eradicated a disease on a global scale: neither has vaccination nor environmental sanitation. But history abounds with instances of disease controlled by public health methods, and WHO's experience with mass treatment of venereal and treponemal disease encourages the belief that control and possibly eradication of these infections can be achieved.

A single mass treatment campaign in an area is not sufficient to master permanently the venereal or treponemal disease problem in that area. Successful public health programs are usually protracted affairs. In treponemal and venereal disease there must be a continuing effort to decrease the number of infectious cases and resurveys are necessary to prevent recrudescence. Many factors—extent of the disease, completeness of case finding, opportunities for re-introduction—must be considered before the question of how many mass surveys can be answered for an area. Infectious cases must be brought down to the point where the local case finding and treatment operation is adequate to deal with remaining pockets of infectious cases. Clearly the more mature and complete the local public health organization the earlier it can assume full responsibility for the local disease situation.

"This fact helps to illuminate the wisdom of WHO's approach to venereal and treponemal disease control: to aid, to the extent of its resources, in the immediate diminution of disease in areas of greatest need, and at the same time to assist in building permanent public health structures especially through training of native personnel. This kind of attack, well supported and continuous, makes bright the hope that effective worldwide control of venereal and treponemal disease can be accomplished."

WHO and UNICEF in Yaws Control

In an article entitled "The principles and practice of yaws control" (*Br med J* 1953 2:74) Dr C J Hackett of the Wellcome Museum of Medical Science, London, describes the treponemal-disease-control programmes of WHO and UNICEF. He summarizes the work of these campaigns in the following words:

"For a long time yet the sequence of census survey and treatment of yaws will be required. Procaine penicillin or some other depot preparation will with difficulty be improved upon. The importance of recognizing cases in the latent secondary stage of the infection must be emphasized some way to doing this is urgently needed.

"An anti yaws campaign is only a means to an end and that end is the gradual and stable development of improved rural health services. This alone can justify the efforts required to carry out an effective anti yaws campaign. Such a campaign in areas where yaws is endemic, is probably the best first step in the improvement of rural health services.

"The work of the World Health Organization and the United Nations International Children's Emergency Fund in assisting treponematoses control work in various countries is of great importance and is an encouragement for the future. Reynolds *et al* (1951) discuss the ways this help can be most effectively applied.

Professor G. Macdonald, of the London School of Hygiene and Tropical Medicine, saw this article before publication and has made the following pertinent comments:

"I am convinced that the general principle is sound. The extension of such work depends on what is wanted. If what is wanted is to start a rural public health service, there is no doubt that the best way of doing so is through measures which are immediately obvious to the population as beneficial, and of course yaws is one of the more prominent examples. Credit earned by this work could be used to persuade people not to accept other obviously less useful work. If I were starting such a scheme I would want a curative measure such as yaws treatment of this nature and also an environmental measure. Quite the best example of the latter is the application of residual insecticides in houses which is appreciated at once for the effect on fleas and flies and later for that on malaria. I would therefore start with a yaws campaign and a residual insecticide campaign as initial steps towards a rural health centre service which would stook environmental and curative work. The approach, in the paper, to the curative side of it seems ideal."

International Non-Proprietary Names

In accordance with paragraph 3 of the Procedure for the Selection of Recommended International Non Proprietary Names for Drugs Moving in International Commerce¹ notice is hereby given that the following name is under consideration by the World Health Organization as a proposed international non proprietary name

*Proposed International
Non-proprietary Name*
(Latin English French)

*Chemical Name or
Description*
(English French)

levallorphanum

levallorphan () 3 hydroxy *N* allylmorphinan

levallorphane () hydroxy 3 *N* allylmorphinane

Comments on, or formal objections to the above name may be filed within a period of six months from 1 July 1954, and should be forwarded to The Director General World Health Organization Palais des Nations Geneva Switzerland

See Chron. World Health Org. 1953 7 297

No

- 1 PSYCHIATRIC ASPECTS OF JUVENILE DELINQUENCY — *Lucien Bovet* (1951)
6/9 \$1.00 Sw fr 4—
- 2 MATERNAL CARE AND MENTAL HEALTH — *John Bowlby* (2nd edition, 1952)
13/6 \$2.00 Sw fr 8— (paperbound)
17/6 \$2.50 Sw fr 10— (clothbound)
- 3 LUTTE ANTIPALUDIQUE PAR LES INSECTICIDES A ACTION RÉMANENTL —
E. J. Pampana (1951) French edition only (out of print)
- 4 EXPERIMENT IN DENTAL CARE — *John T. Fulton* (1951)
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TREPONEMATOSES

A World Problem

T. GUTHIE & R. R. WILLCOX

This publication tells the story of the progress made since the second World War in combating this group of infections

In a section dealing with changing concepts in the epidemiology and control of the treponematoses the authors give a brief epidemiological history of the treponematoses describe the nature and extent of the problem which these infections present today and discuss the new methods for their control This is followed by a record of national and international activities in treponematoses control in recent years In a third and final section various economic aspects of the problem are discussed including the economic gains which may result from selective public health programmes in this field

The booklet is abundantly illustrated with graphs maps and clinical photographs and includes a selective WHO bibliography on treponematoses control

This publication is the first complete review of the present status of the treponematoses as a world health problem and should be of interest not only to treponematologists and venereologists but also to the general public health worker to those interested in medical advances and to all concerned with international co-operation in health activities

1954 79 pages 27 illustrations 3/6 \$0.50 Sw fr 2—

(This booklet is a reprint of a special number of the
Chronicle of the World Health Organization 1954 8 37114)



CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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SCHEDULE OF MEETINGS

2-7 August	Expert Committee on Midwifery Training first session The Hague
23-28 August	Conference of a Consultant Group on Prosthetics, Copenhagen
2-11 September	Study Conference on Children in Hospitals Stockholm
6-13 September	Regional Committee for Western Pacific fifth session Manila
13-16 September	Regional Committee for Europe fourth session Opatija
13-18 September	Expert Committee on Health Statistics, fourth session, Geneva
20-25 September	Regional Committee for Africa fourth session Léopoldville
21-25 September	Regional Committee for South East Asia seventh session, New Delhi
27-30 September	Expert Committee on the International Pharmacopoeia Subcommittee on Non Proprietary Names sixth session Geneva
27 September 2 October	Joint Meeting of the Expert Committees on Mental Health and on Alcohol Geneva

The mention of manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature which are not mentioned.

SEVENTH WORLD HEALTH ASSEMBLY

The Seventh World Health Assembly which met in Geneva from 4 to 21 May 1954 was attended by representatives of 67 Member States¹ and 4 Associate Members²

Dr Joseph N Togba Director General of the National Health Service Liberia was unanimously elected President of the Assembly. Dr Togba pointed out in his presidential address that to the best of his knowledge "this is the first world wide organization which has a true African as its President" and interpreted the gesture of the Assembly in electing him to its highest office as evidence that in WHO "the concept of democracy is being translated into action without regard to size or development of country to race to colour or to creed"

At the time of the Seventh World Health Assembly's meeting in Geneva the Palais des Nations also saw the opening of the important political conference called to discuss a peace settlement in Korea and Indo-China. "There is a deep symbolic significance", Dr Togba said in his presidential address "in the fact that this session of our Assembly coincides with the holding of the Asian Conference in this same Palais des Nations. I am sure that this remarkable coincidence will heighten in all of us our sense of responsibility by further underlining the rôle our Organization can and must play in the creation of a secure world. A really sincere rapproche-

ment between the now divided parts of the world should undoubtedly bring our Organization closer to the goal of universal membership which is an indispensable condition for the success of our long range programme. Furthermore it can reasonably be expected that a substantial relief in international tension would also alleviate the tremendous economic burdens all nations now carry as a result of ever increasing armaments.

"Each country would then at last be able to devote a greater proportion of its national revenue to constructive purposes and the improvement of health can surely be considered as a fundamental factor in the raising of the general welfare of the people."

"It is precisely this close relationship between health and prosperity which defines the rôle an organization like WHO must play and the responsibilities it must assume in the cause of peace. If indeed it is true that any success met in this renewed attempt to bridge the political gap separating West and East will directly benefit the work of WHO it is equally true that each step we take together towards the betterment of world health is also part of our search for world peace. Indeed recent history has shown us that on the national as well as the international level any advance made in the political field is nullified unless accompanied by similar advances in the social and economic fields."

"Thus the task which lies before this Assembly is far greater—and of far greater import—than just to make another move against any particular disease or even a group of diseases. Within our own particular sphere of action we have to restore the confidence of the growing number of

Afghanistan, Argentina, Australia, Austria, Belgium, Brazil, Burma, Cambodia, Canada, Ceylon, Chile, China, Costa Rica, Cuba, Denmark, Dominica, Republic of the Congo, Egypt, El Salvador, Finland, France, Germany, Guatemala, Haiti, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Korea, Laos, Lebanon, Liberia, Libya, Luxembourg, Malaya, Maldives, Marshall Islands, Mauritania, Mauritius, Mexico, Monaco, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Portugal, Spain, Sweden, Switzerland, Syria, Thailand, Turkey, Union of South Africa, Uruguay, United Kingdom, United States of America, Viet Nam, Yemen, Yugoslavia.

¹ The Federation of Rhodesia and Nyasaland, Morocco (French Zone), Spanish Protectorate Zone, Morocco, Tunisia.

people who despair of man's ability to take his destiny in his own hands and to use the marvellous gifts of his brain for his good instead of his destruction. We have to prove to the people of the world that what ever geographical, political, religious, social or economic group they belong to, they can solve their problems *not* in terms of what they believe is best for their individual countries, but only of what will benefit the world as a whole.

The Assembly elected the following three Vice Presidents: Dr Y Baoui (Lebanon), Sir Claude Corea (Ceylon) and Dr F Hurtado (Cuba). Dr E J Aujaleu (France) was elected Chairman of the Committee on Programme and Budget, and Dr M Jafar (Pakistan) Chairman of the Committee on Administration, Finance and Legal Matters.

As every year before discussing the new programme and budget and various other technical, legal, and administrative questions a general discussion was held on the Director General's report on the activities of the Organization during the preceding year.³ In presenting his Annual Report to the Assembly the Director General opened the discussion by stating:

In the first place I wish to give you my views on the idea of regionalization itself. This was talked about, in fact talked about a great deal some years ago. There were those who thought that a young organization like ours could not afford such a luxury. Others did not wholly subscribe to the principle itself, they feared that in the long run regionalization might destroy the world character of the Organization, that is to say the very spirit which had led to its creation. I do not hesitate to assert today that the experience of these past five years has fully justified the views of those who favoured the most extensive decentralization. Having

worked as long at headquarters as in one of our regions I for my part am firmly convinced that most of the results we have obtained we owe to decentralization.

"This is obviously not the place to describe in full detail all that we accomplished in 1953 or propose to carry out in the coming year. However, generally speaking I have every hope that thanks to the means at the disposal of headquarters and of the regional offices, the various countries can count on WHO to an increasing extent to improve their epidemiological services without which they would be unable to protect their people against the outbreak of epidemics, to develop their vital statistical services, which enable them to estimate the extent of the problems they have to face, to inform them of the progress being made every day in medical science, and finally to help them to benefit from improvements in technique.

In the coming years we shall continue to create and develop rural health services in collaboration with the governments. We shall arrange conferences, seminars or other meetings which cannot fail to prove valuable. This will be done not only on the national level but also regionally so as to ensure the co-operation of all countries whose problems are closely related. We shall also make it our duty to help as far as possible in improving environmental sanitation. In this aspect of sanitation to which we are constantly devoting more attention the fundamental problem is, as you are aware, the training of qualified staff. We also hope to foster, in close collaboration with governments, the operation of vast campaigns against endemic diseases. We know these diseases like old enemies we know what should be done to combat them effectively. Let us mobilize all possible resources for this purpose.

During the general discussion which followed the introductory remarks of the

³ Chron. Wld Hlth Org 1954 8 155

Director General delegates from many countries expressed general satisfaction with the work of the Organization and offered suggestions for possible new developments and criticism on certain programmes being carried out by WHO. A complete account of these discussions will be found in No 55 of the *Official Records of the World Health Organization* which is expected to become available in October of this year.

PROGRAMME AND BUDGET

The unforeseen and severe cuts in the funds available for activities carried out under the technical assistance programme confronted the Seventh World Health Assembly with financial problems of a greater magnitude than perhaps any other preceding Assembly. The basic question before the delegates was whether to increase the budget of the Organization to enable it to fulfil all its commitments and thus live up to the expectations of each Member government or to reduce certain activities valuable as they might be in order not to increase the burden of the financial contribution of all Member States.

"We have reached a real turning point in the history of WHO" the Director General warned the Assembly in plenary session. "Through the force of circumstances we first passed through a stage of emergency measures and then through that of improvising short term programmes. We have now arrived at the period when WHO is fully equal to the task for which it was actually created. I mean by that that the moment has finally come where we can only regard our action in the form of long term programmes thoroughly and accurately prepared. This implies continuity in the programmes and thus security as regards funds. And that brings me to the most important

problem we have to face the problem of the budget. You are aware of the prolonged and extremely serious financial difficulties which we had to surmount recently. The crisis occurred because we were suddenly deprived of the indispensable means of financing a programme that was continually expanding. We counted on receiving certain funds and we were disappointed. At the same time we came within an ace of losing our most precious possession the confidence of governments in the Organization's ability to fulfil its engagements. This situation Mr President and delegates must not occur again. I told you a few moments ago that we have long since passed the stage of improvisation of hasty and limited measures to enter into a period of action carefully and deliberately thought out. We should now be able to dispose of the means to carry out the policy we have chosen. WHO cannot place its work on a solid and durable foundation if a part of its world wide programme has to depend on resources which may or may not be forthcoming.

"A heavy task has been entrusted to this Organization, one requiring a long time for its accomplishment. What do the past few years signify in comparison with what lies before us? Very little indeed. We must think in terms of WHO's future. WHO should be able to contemplate with confidence the magnitude of the task it has to accomplish. What WHO needs is in short the means to achieve full development. That is why while the bitterness caused by our very recent difficulties is still fresh in our minds and while we are conscious of the danger that we may again have to say no or wait to urgent appeals I ask that our budget for 1955 be increased. WHO I repeat cannot be left dependent on uncertain resources.

"The basic issue" concluded the Director General in presenting his budget to one of

people who despair of man's ability to take his destiny in his own hands and to use the marvellous gifts of his brain for his good instead of his destruction. We have to prove to the people of the world that what ever geographical, political, religious, social, or economic group they belong to, they can solve their problems *not* in terms of what they believe is best for their individual countries, but only of what will benefit the world as a whole.

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In the coming years, we shall continue to create and develop rural health services in collaboration with the governments. We shall arrange conferences, seminars or other meetings which cannot fail to prove valuable. This will be done not only on the national level but also regionally so as to ensure the co-operation of all countries whose problems are closely related. We shall also make it our duty to help as far as possible in improving environmental sanitation. In this aspect of sanitation to which we are constantly devoting more attention, the fundamental problem is as you are aware, the training of qualified staff. We also hope to foster, in close collaboration with governments, the operation of vast campaigns against endemic diseases. We know these diseases like old enemies; we know what should be done to combat them effectively. Let us mobilize all possible resources for this purpose.

During the general discussion which followed the introductory remarks of the

³ Chron. *Wld Hlth Org* 1954, 8, 153.

offices considered that the most important task was the control of communicable diseases together with improvement in environmental sanitation—which forms the basis of any such control—and the health education of the people without which no environmental sanitation programme however good could succeed. In their opinion WHO should concentrate its efforts on these activities instead of dispersing them over a number of secondary activities. No one of course underrated the difficulties involved. In India for example where a vast environmental sanitation programme was about to be started with the assistance of the United States Foreign Operations Administration (USFOA) there was a shortage not of personnel but of equipment large capital sums were needed which the international organizations could not provide. Another difficulty was that the primary importance of sanitation was not always understood, and in some of the requests for assistance addressed to WHO it was sometimes forgotten that sanitation was the first step in the control of communicable disease. At the end of the discussion on this subject the Assembly decided to request the Executive Board and the Director General to seek the best means of drawing the attention of Member States to the role of environmental sanitation and to the assistance which WHO could give them in this field.

Several delegates expressed the view that WHO should disseminate more information on medical and scientific problems in particular the results of international seminars and other meetings of experts. It was also considered that more effort should be made to promote scientific research and even to participate in such work. The United States delegate cited two examples of fields in which research could be carried out which would be valuable from the point of view of world health. One was the preparation of compost which would avoid the loss of

indispensable nutritive elements in poorer countries and the other the effect of sun light on sewage stimulating the formation of algae particularly rich in proteins and fats which could serve as a food for fish and other animals on which man depended. WHO would generally although not necessarily confine itself to investigations into the practical application of laboratory discoveries. The Assembly invited the Member States which were in a position to carry out research to collaborate with WHO in research programmes of importance to international health. It also requested the Director General to maintain close contact with other specialized agencies concerned with research work in the medical and sanitary fields.

Delegates requested that special measures be taken against certain diseases particularly smallpox. There was some discussion on the desirability of extending compulsory vaccination. Delegates described the situation with regard to the prevalence and control of smallpox in their own countries. In general it was agreed that there was a need for further research on this question. The Assembly requested the Director General to continue to study the best means of controlling smallpox especially in countries where the disease is endemic to ask health administrators to organize smallpox campaigns wherever the need arose and to give them every possible assistance in such activities.

Delegates of a number of European countries—Luxembourg the Netherlands Norway and Sweden—considered that poliomyelitis should come high on the list of priorities. They felt that the method evolved by Professor Lassen in 1952 represented a real therapeutic advance and that it should be taught under the auspices of WHO before further devastating outbreaks occurred. The Swedish Government invited the Regional Office for Europe to study the possibility

the main committees of the Assembly, is simply whether, at this crucial moment of WHO's development the Organization will be given the financial resources it must have if it is to discharge adequately the responsibilities the people of the world, through their governments have assigned to it. I consider the programme of work for 1955

realistic from all points of view. This is so because we have undoubtedly overcome the three main obstacles which during its formative years, made it difficult for WHO to give full scope to its activities.

Today you have an organization with a sound structure both at headquarters and in the regions. Today your organization can command the services of people who are not only highly qualified in the various branches of public health but who also have a clear understanding of the problems of international life. Today, too, we have at our disposal, as a result of six years experience, a set of techniques and methods incorporated in WHO which can be used for the betterment of world health in the most effective and most economical way.

'During the years 1953 and 1954, we had to postpone a total number of one hundred and seventy six projects requested by governments, involving a total expenditure of three million three hundred thousand dollars. The value of the services lost to our Member States can be judged by the fact that of these one hundred and seventy six projects, eighteen related to maternal and child health, thirteen to tuberculosis, twelve to endemo epidemic diseases, forty to public health administration etc.

This drastic curtailment of our programme was due to the considerable decrease in the amount of cash expected to be available under the Expanded Programme of Technical Assistance as compared with the amounts WHO had at its disposal from this source in the preceding two financial periods."

The Programme

The need to reduce expenditure gave delegates an opportunity to distinguish between what they considered the indispensable activities of WHO and those which could be classified as secondary.

Most delegates agreed that one of the most valuable activities was the training of medical and paramedical personnel. In this connexion, the United States delegation observed that there was a tendency to give more and more specialized training to public health personnel; the delegation inferred that there was as serious a shortage of men of broad background and capabilities as of specialists. Persons of really wide training could define the problems existing in a given zone before projects for that zone were organized. The delegate of Venezuela also thought it preferable to train a large number of administrators capable of seeing problems as a whole, rather than specialists.

A number of delegates felt that the award of fellowships was one of the most practical ways of providing for the training of personnel. The delegates of India, Thailand and Yugoslavia pointed out, however, that fellowships would be still more valuable if they made it possible for candidates to be trained in their own countries rather than abroad. A number of other suggestions were made in connexion with the training of personnel: experts on missions should take advantage of their stay in a locality to train others in their speciality, health demonstration areas should be used for the instruction of personnel from other areas with similar health problems, medical missions should be more frequently organized, should be of at least six months' duration and should provide training in a number of places.

The representatives of the underdeveloped countries and the directors of certain regional

offices considered that the most important task was the control of communicable diseases together with improvement in environmental sanitation—which forms the basis of any such control—and the health education of the people without which no environmental sanitation programme however good, could succeed. In their opinion WHO should concentrate its efforts on these activities instead of dispersing them over a number of secondary activities. No one of course underrated the difficulties involved in India for example where a vast environmental sanitation programme was about to be started with the assistance of the United States Foreign Operations Administration (USFOA) there was a shortage not of personnel but of equipment large capital sums were needed which the international organizations could not provide. Another difficulty was that the primary importance of sanitation was not always understood and in some of the requests for assistance addressed to WHO it was sometimes forgotten that sanitation was the first step in the control of communicable disease. At the end of the discussion on this subject the Assembly decided to request the Executive Board and the Director General to seek the best means of drawing the attention of Member States to the role of environmental sanitation and to the assistance which WHO could give them in this field.

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of organizing teams which would give courses on the treatment of respiratory paralysis to physicians and nurses and would be at the disposal of the Regional Office for the rapid training of personnel in countries attacked by serious epidemics. In spite of insistence by several delegates on the necessity for immediate action, the decisions will have to be taken by the Regional Committee when it reviews its programme in September 1954. This meeting in fact, coincides with that of the International Congress on Poliomyelitis in Rome. According to the Netherlands delegation the Regional Committee should then at once begin organizing a course on the treatment of poliomyelitis the practical work being entrusted to a team formed as suggested by the Swedish Government.

The question of cancer was raised by the French delegate who felt that WHO should not confine its attention, as at present, to the notification of cases of cancer and their statistical presentation. Investigations should be undertaken into the real incidence of cancer in the various parts of the world, in particular on the causes of cancer in regions in which living conditions were very different from those in the more developed countries, to date, investigations had been concerned exclusively with the latter. Why, for example, was cancer of the liver so frequent in certain regions of Africa and Asia? The representative of the International Union against Cancer was also of the opinion that such surveys would provide extremely valuable etiological data, he felt that very few bodies were as well placed as WHO for carrying out this type of work.

During the debate on the budget the Director General had stated that the projects planned for 1955 had already been screened and that not one of them could be suppressed without serious consequences. The discussion on the programme seemed to show that after examination of WHO's

present activities delegates also felt that none could be dispensed with. A very few projects were considered by certain delegates to be of secondary importance: the recruitment of a hospital architect and of a consultant on forensic medicine, the creation of a rehabilitation centre, and the holding of a mental health seminar. On the whole, although they were against any expenditure they considered excessive, the delegates were still inclined to suggest new subjects for projects, thus demonstrating their wish to see a continual widening of WHO's field of activity.

Decisions

The most important decisions taken by the Seventh World Health Assembly are the following:

— The Assembly fixed the WHO regular budget for 1955 at \$9,500,000, this sum represents an increase of \$1,000,000 over the 1954 budget but is \$800,000 less than the amount proposed by the Director General.

— The WHO programme remains generally the same,* but it is proposed that the Organization's activities be intensified in the fields of environmental sanitation and poliomyelitis and that increased attention be given to the international co-ordination of research into health problems. WHO will also endeavour to improve smallpox control particularly in countries where this disease is still endemic. The rules determining the choice of international non proprietary names for drugs are to be re-examined and the Eighth World Health Assembly will carry out a revision of those articles of the International Sanitary Regulations which refer to the delineation of yellow fever endemic zones.

* A detailed description of the proposed programme for 1955 will be found in *Off. Rec. World Health Org.* 50.

— The Assembly established a procedure which should enable the Regional Committee for the Eastern Mediterranean to meet this year. In spite of the division of the Regional Committee into two subcommittees it was not possible to arrange any meeting last year. The Assembly decided that each Member State of the Region may sit in the subcommittee of its own choice that although voting rights will be accorded in only one of the subcommittees. Member States may take part in the deliberations of both. The Assembly hopes that some Member States will join both subcommittees in order to strengthen the work of WHO. Each subcommittee will decide on its own rules of procedure and each will appoint a person to meet with the Regional Director in order to harmonize the decisions of the subcommittees. Both subcommittees will have the same agenda, which may deal with matters affecting any part of the Region.

— The Federation of Rhodesia and Nyasaland was admitted as an Associate Member of WHO.

— The Assembly maintained the number of seats on the Executive Board at 18 rejecting a proposal that had been made to increase

the number to 24 in view of the increase in the number of Member States—which is now 84—and in order to ensure wider geographical representation.

— Six Member States were elected by the Assembly to designate a person to serve on the Executive Board, replacing those whose mandate expires this year. The six States in question were Burma, Chile, France, Japan, Saudi Arabia, and the Union of South Africa.

— The Assembly awarded the Leon Bernard Foundation Prize to Professor Jacques Parisot (France) (see p. 235) and the Darling Foundation Prize to Dr. G. Robert Coatney (USA) and Professor G. MacDonald (England) (see p. 239).

As a further step towards the adoption of Spanish as a working language it was decided that the *Official Records* and reports of expert committees will be issued in Spanish as well as in English and French.

Finally the Assembly decided that the Eighth World Health Assembly will be held in Mexico accepting the invitation of the Mexican Government which will bear all the extra costs of holding a session away from headquarters.

Serbo-Croat Edition of WHO Monograph

Bearing the title *Materinska briga za dijete i duševno zdravlje* a Serbo-Croat translation of J. Bowlby's study *Maternal care and mental health* was published in 1953 in Zagreb, Yugoslavia under official auspices by "Zaštita Zdravlja". This book was originally published in 1951 as No. 2 in the *World Health Organization Monograph Series*. The translation is by Dr. Ante Pasković and has a preface by Dr. Božidar Marković. In this preface he says: "I hope that in this country as well this book will help to bring about a change both in theory and in methods of work. This, however, will not be easy for nowhere is it more difficult to eradicate deeply rooted prejudices than in the field of mental health."

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operational unit—representing the smallest unit of health service for rural areas—and would provide the basic health services such as maternal and child health services communicable-disease control environmental sanitation health education of the public medical care and maintenance of records for statistical purposes. Certain members of the group expressed the view that public health nursing being a technique to be utilized in all the six basic health services mentioned above might not necessarily constitute a separate item of service.

Considerable discussion took place on the importance of the integration of curative and preventive services in the unit particularly in the underdeveloped areas. The majority view was that the preventive and curative services should be integrated with the caution that preventive work should not be swamped by medical care.

In areas of small scattered villages where transport was difficult mobile health teams operating under the unit on a fixed schedule might be desirable.

In discussing the geographical area to be covered by a rural health unit the group emphasized the great advantage in making the area correspond to that of a local political or administrative unit where other activities such as education agriculture co-operatives and handicrafts were also being carried out so that co-ordinated social and economic development at this level could be achieved. While it was recognized that it was not advisable to restrict the rural health unit's area in terms of population it was however pointed out that the average population covered by successful existing rural health units ranged from 60 000 to 100 000.

The group devoted considerable time to discussing the importance and methods of encouraging community participation. There were many ways of doing this. The need for health education of the public was fully ad-

mitted by all the speakers. The group thought that one effective means of developing community participation would be through the organization of village health committees representing local community leaders. Several countries had tried to educate villagers to serve on such committees and to carry out specific duties. In this connexion the importance of co-operating with the educational activities in the community was further stressed. This aim could more easily be achieved if the unit was in close association with the local civil administration.

In areas where local initiative was lacking it had been found necessary to have the national or provincial health authorities take the lead in establishing rural health units with a view to assisting the local administrative bodies to develop a suitable local health administration under which the unit would operate. Considerable discussion took place on the possibilities of using the technique of administering the rural unit by an elected committee with financial responsibility. In the view of most speakers the theoretical desirability of this step would need to give way before the practical impossibility of it in most if not all underdeveloped countries. The best to be hoped for in India for instance was a Board of Health to advise. Nevertheless the successful development of health units in rural areas would depend a great deal on the progress of such decentralization.

The group repeatedly stressed the need to study psychological and anthropological aspects. Their principles would often give the answer to local difficulties and all work should be based upon them.

The staff of a rural health unit would depend on its size and scope of work. In general the group agreed that the unit should be under the direction of at least one fully qualified doctor with the necessary number of public health nurses midwives sanitarians and other auxiliary workers as

TECHNICAL DISCUSSIONS

Public-Health Units in Rural Areas

Rural Sanitation

Zoonoses

Public-Health Problems in Rural Areas was selected as the subject for the Technical Discussions at the Seventh World Health Assembly. Interest in this topic dates back to the Health Organization of the League of Nations.

The Assembly designated Professor A Stampar (Yugoslavia) as the General Chairman for the Technical Discussions, and Doctors E de Paiva Ferreira Braga (Brazil), C K Lakshmanan (India), and J Heng Liu (China) as the three Group Chairmen. 'Public Health Units in Rural Areas', 'Rural Sanitation', and 'Zoonoses' were the topics chosen for separate discussion. Three outstanding specialists—Professor F Brockington of England, Professor M Petrik of Yugoslavia and Professor K F Meyer of the United States of America—were invited to present introductory statements and to assist the groups during the discussions.

Professor Stampar, in his introductory remarks, reminded the groups that the discussions were informal and that participants were there in their personal capacities and not as representatives of their respective countries. In his opinion, World Health Assemblies had been too much occupied in the past with administrative problems, assemblies of public health administrators from all parts of the world were rare and provided valuable opportunities for technical discussions on subjects of world-wide interest and importance. Such technical conferences had been arranged since 1951. They facilitated a free interchange of views and discussion of experience gained in all

parts of the world, provided important information and gave a better insight into matters of a practical nature.

Professor Meyer then briefly introduced the subject of zoonoses. He emphasized the hazard constituted in the environment by animal diseases transmissible to man and stressed the importance, in the control of such diseases, of alert physicians, a central laboratory, a good reporting system, and co-operation between an educated public, the public health veterinarian and the local health department.

Professor Petrik emphasized the importance of rural environmental sanitation as part of a general public health programme. He outlined the various phases of sanitation and stressed the need for suiting the programme to the needs of the community and the desirability of inducing self aid through instruction and education.

Professor Brockington introduced the subject of public health units in rural areas and reminded the participants that the world still enjoys bad health when it could have good health.

There follows a summary of the discussions held in the three study groups.

PUBLIC HEALTH UNITS IN RURAL AREAS

The group agreed with the definition of a health unit adopted in the second report of the Expert Committee on Public Health Administration¹. It was considered a purely

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the service called for. It was agreed that specialist staff in various branches of public-health work would generally come from a higher level in the health administration.

The following points were brought out as the important considerations in providing doctors to work in rural areas:

- 1 Enforced service in rural areas for new practitioners,

- 2 Better remuneration

- 3 Adequate living and working accommodation

- 4 Professional attractions—clinical and laboratory facilities, promotion and refresher courses, etc

The group realized the importance of using local doctors to help in the work.

It was pointed out in this connexion that doctors should be prepared 'socially' as well as technically in their undergraduate medical education to take up their responsibilities in a modern society. To this effect, the public health course in the Medical School of the University of New Zealand had been reorganized to include 3-4 months' internship training in a rural health centre and similar trends of development were planned in India. The importance of changing the attitude of all doctors to recognize their social as well as technical responsibilities was mentioned. Doctors in health departments must be willing to listen to the health needs as expressed by the people themselves.

It was also emphasized that auxiliary workers should be recruited and trained locally in order that they might the more easily understand some of their own local customs and problems and be the more willing to work in rural areas. Many contributors to the discussions emphasized that rural health work must use locally recruited and trained persons. These could be of two types (1) auxiliary health workers and (2) village health aides for more simple duties. The success of the programme in

many countries was to be seen in this use of local health workers. Auxiliary workers must work under the supervision of qualified professional staff.

The group exchanged views on the various ways and means of financing rural health work. In certain countries, where local civil administration was well developed the expenditure for a rural health unit constituted a part of the local government budget, with or without grants in aid from the central or provincial government. In some countries a central system of finance was at present found to be the only way to cover the cost.

It was pointed out, however, that the most effective way of financing a rural health unit would be through some form of taxation by the national, provincial or local administrations. Contribution on a purely voluntary basis was not thought dependable.

Members of the group considered that without financial contribution the population in rural areas could certainly contribute free labour and substance in kind in participating in the health work as a form of self help.

The group realized the importance of having rural health work closely integrated with other social and economic activities in the community. No members, however, had much experience in this respect. In a few countries, health work in selected rural areas had been developed in close co-ordination with other educational and agricultural extension work (for instance in Morocco and Indonesia) but time had been too short to observe any results from such experiments. In El Salvador the health demonstration area assisted by WHO had initiated an integrated development of health education, agriculture and public utilities services in a rural area under a unified board created by the central government. During the three years of operation the health

work had developed very satisfactorily and the development of other aspects was being planned

RURAL SANITATION

The discussions of the group on rural sanitation which were held on the basis of the definition of environmental sanitation as worded in the first and second reports of the WHO Expert Committee on Environmental Sanitation^{1, 2} showed a remarkable degree of unanimity. However in the course of the discussion that definition was repeatedly stated not to be sufficiently broad because it limits the control of environmental factors to those which exercise or may exercise a deleterious effect upon man's well being. It was suggested that the definition of environmental sanitation be expanded to include activity for the conservation and development of natural resources to raise the standards of living in any community.

The extreme importance of environmental sanitation in any programme of national development was emphasized time and again. It was the opinion of the group that the development of a country's resources, its power and its industrial potential can only be fully successful if accompanied by the development of environmental sanitation. Rural sanitation in particular was considered an essential part of public health work in rural regions in general in countries at the lowest level of development. It was said to be the problem of first importance and failure to solve basic problems of sanitation (such as utilization of organic wastes) was believed to be the cause of nomadism in some parts of the world.

Because rural sanitation has a direct

bearing on the food producing capacity it should be a prominent part of the general plan of economic development in predominantly agricultural regions of the world. In order to ensure stability of environmental changes brought about by rural sanitation it should be carried out with the support of the population. It was emphasized that there were no absolute solutions to problems of rural sanitation and that they should be in proper relation to the level of development of the region. It was stressed that in many rural areas a simple approach to problems of rural sanitation with the use of simple means within the resources of the area can create major improvements.

Rural sanitation should embrace the disposal of wastes, water supply, housing, control of insect and rodent vectors of disease and food control. It was understood that occupational hygiene is included in this scope.

The extreme importance of the proper handling and treatment of human excreta and of their use for crop production was recognized. In view of the growing demands for production of food, the exhaustion of the former sources of plant nutrients and the slight possibilities of an essential increase of cultivable surfaces, it was recognized that human excreta must continue to be conserved and utilized in vast areas of the world. The group recognized the importance of such storage of excreta as would preclude their use before the pathogenic germs had been practically destroyed and recommended the composting of excreta with other categories of waste either by a partly aerobic and partly anaerobic procedure or by the anaerobic process alone. The latter offers a number of advantages even in small economic units without additional work provided the composting is done by adequately controlled methods and under proper supervision. In fact by proper manipulation and by the strict observance of certain fundamental prin-

ciples easily understood and practised, practically complete elimination of pathogenic germs and of helminthic ova can be achieved. Such a method of utilization was considered a satisfactory method of disposal. It was recognized that in some regions the pollution of ground surface was of such intensity and extent that long term programmes of development of agriculture and rural sanitation combined with education would be necessary to improve the conditions. Such programmes should be established and put into operation.

While no compromise should be allowed on the quality of drinking water, the economics of water supply should be duly considered in the choice of the supply system. In rural regions, purification or complicated machinery should be used only in regional water supply systems of such magnitude as makes certain an adequate maintenance and control. The smaller the supplied region, the simpler should be the supply system and the less the dependence upon mechanical means and purification processes. Bored dug and driven wells of proper design are fully capable of furnishing safe water.

The magnitude of the problem of rural housing was unanimously agreed on. The chief factors impeding a desirable rate of progress were pointed out as being the high prices of land and of building materials, the scarcity of the latter and of the means for their production, and the poverty and ignorance of the rural population. Scientific knowledge of the factors influencing the micro-environment and the comfort of man—with particular reference to rural housing—should be extended by further research, for example on the exploitation of solar energy and of heat storage in earth, rock, or water, and on the application of the evaporative cooling effect of vegetation with a high transpiration rate. The possibilities of producing new and cheap building

materials and methods, based on local resources, should also be studied.

Concerning the control of insect and rodent vectors it was recognized that dependence upon chemical insecticides as a substitute for environmental sanitation measures in the control of certain insects such as flies, was not warranted because of their ability to acquire a tolerance or resistance to the specific chemical. In certain circumstances however chemical insecticides do furnish a dependable, simple means of control.

In the course of the discussions it was repeatedly stated that the interconnexion of various problems is of such an order as to impose as a necessity the study of the environmental factors as a whole in order to find the most economical and satisfactory solution for several problems at once.

As regard the material means for promoting rural sanitation it was emphasized that no activity should be undertaken without the support and contribution of the local population, and that the various higher levels of administration should participate in the burdens in proportion to their respective interest in the problems. The least contribution from the local population should comprise unskilled labour, local transport, and local materials. The general policy of fostering a gradual increase in the level of local participation is recommended.

As financing was declared to be the gravest obstacle to rural sanitation, several ways were pointed out for the securing of funds such as loans at low rates of interest, either direct or through co-operative societies, grants in aid with proportionate participation at various administrative levels, diversion of certain categories of revenue to rural sanitation and measures for state guarantee of loans. The high price and the scarcity of materials were declared to be other important obstacles which should be remedied to the utmost—if necessary by

establishing public or co-operatively owned factories for basic materials such as cement or brick.

A co-operative movement education of the people and of teachers and proper legislation (but not that of a restrictive character) were recognized as being of paramount importance. Co-operative activities were especially emphasized partly on account of their being "a school of democracy" and the most powerful means of self help which were considered to be the desirable goals of all means used to foster rural sanitation. The necessity of integrating the programme of rural sanitation into the framework of a general plan was emphasized. Moreover it was recommended that such activities be extended to an international level through various international agencies such as FAO, UNESCO and WHO.

It was suggested that in this activity the appropriate role of the central government would be primarily that of stimulation, initiation and supervision.

As to personnel it was emphasized that no country can do the work on rural sanitation without adequately trained staff. The less developed countries can least afford to abstain from providing such personnel. Two categories were especially mentioned as essential: sanitary engineers (or public health engineers) at least at the highest level of administration and local workers specially trained in short courses for specific kinds of work. It has been found desirable to introduce at each level of administration at least one worker of high calibre with appropriate training which should be conducted in the region of work and ought to be of such a nature as to enable the worker to recognize the importance of various problems and to select the most important one in any area. In maintaining a balanced training at all levels it should be possible to develop in an orderly manner an extension of sources of personnel.

Rural sanitation projects should be conducted from a health or welfare centre. Such a centre should be in harmony with the existing administrative system.

ZOOZOSES

The discussions on this subject were largely concerned with specific technical problems of different zoonoses and with the means of organizing zoonoses services in health departments with particular reference to rural areas. The discussions clearly brought out the fact that zoonoses are of very great importance and often serve as a cause of disastrous losses to the health and economy of the rural population.

Technical aspects

The epidemiology of jungle yellow fever was explained in detail and it was pointed out that perhaps the best measure of control of potential human infection lay in the control and eradication of *Aedes aegypti*. This is true with respect particularly to possible international spread of the disease, and one of the recommended means for effective international surveillance and control is the submission of quarterly reports on *A. aegypti* indices in cities and ports near jungle yellow fever areas. Such reporting has already been adopted by the countries of Latin America through the Pan American Sanitary Bureau.

A report was given on the *Salmonella typhimurium* epidemic which occurred in Sweden during the summer of 1953. It was pointed out that the epidemic arose from contaminated meat emanating from one slaughter house. The carrier rate of *Salmonella* in cattle in Sweden was shown to be about 2% and it is felt that most contamination of meat occurred in the slaughter house because of faulty practices of hygiene. In addition the unusually hot weather and a

ciples easily understood and practised, practically complete elimination of pathogenic germs and of helminthic ova can be achieved. Such a method of utilization was considered a satisfactory method of disposal. It was recognized that in some regions the pollution of ground surface was of such intensity and extent that long term programmes of development of agriculture and rural sanitation combined with education would be necessary to improve the conditions. Such programmes should be established and put into operation.

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achieved for the successful implementation of control measures

Laboratory services

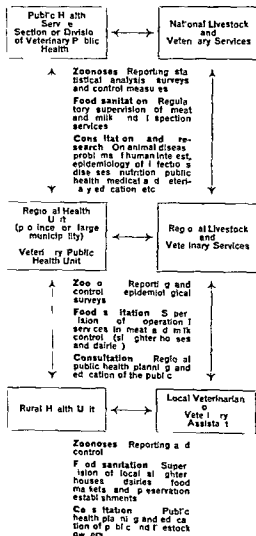
Laboratory techniques for diagnostic purposes are similar and in many instances identical in human and veterinary medicine. Discussion brought out the obvious advantage of combining wherever possible human and veterinary diagnostic laboratories especially in countries where there is a great deficiency of trained laboratory personnel. Many advanced countries in fact have already adopted this procedure which has resulted in better laboratory services and reporting of diseases. Brucellosis was cited as an example in which veterinary medicine has had much more experience than human medicine in diagnostic procedures and this experience can be incorporated and utilized in human diagnostic laboratories. Laboratory procedures common to human and veterinary medicine are found in such diseases as anthrax, rabies, salmonellosis, tuberculosis, leptospirosis, tularaemia, psittacosis, the rickettsioses and the encephalides.

Discussion brought out the fact that there was great need for public health laboratories to have a concise laboratory manual with special reference to the zoonoses. It was pointed out that such a manual has already been prepared by WHO for at least one disease—rabies—and partially with respect to several other diseases—brucellosis, leptospirosis, bovine tuberculosis and Q fever.

Organization of zoonoses services

Much discussion was devoted to the accompanying diagram which outlines the organization of services on zoonoses in a fairly advanced form. The basic feature of this organization is the establishment of close collaboration between health and

THE ORGANIZATION OF VETERINARY PUBLIC HEALTH IN THE NATIONAL PUBLIC HEALTH SERVICE



zootechnical services at all levels of organization—central, provincial or rural. It was stressed that despite the very limited number of health and veterinary personnel existing in many countries today, immediate steps can be taken to bring about a marked

failure of refrigeration facilities contributed to the widespread epidemic

Since *Salmonella* organisms in domestic animals used for meat purposes are found principally in the enteric track, it was urged that slaughter houses make provision for the handling of intestinal organs in a room set apart for this purpose in the abattoir

The use of strains of *Salmonella* supposedly avirulent for man as a measure of rat control was severely condemned. The Danish strain of *Salmonella* frequently advertised for rat control purposes is known to have caused many human infections, and this method of rat control is therefore considered to be very dangerous

It was further pointed out that ducks eggs were a very frequent source of *Salmonella* infection in human beings, and it was recommended that ducks eggs sold to bakers should be pasteurized. In Holland ducks' eggs sold to the public bear a stamp advising that they be boiled for at least 10 minutes before use

Reporting of zoonoses

It was recognized that adequate reporting of zoonoses both in man and in animals is essential in order to gauge accurately the zoonoses problem in a particular country and to institute adequate control measures. The following list of notifiable diseases was recommended for inclusion among the communicable diseases normally reported within a country: brucellosis, anthrax, rabies, salmonellosis (identified by type), tuberculosis (identified by type), leptospirosis (identified by type), encephalitis (identified by type), rickettsiosis (identified by type), hydatidosis, trichinosis, tularemia and psittacosis. These should all be reported by the health services and the zootechnical services. In addition, the following zoonoses should be reported where they are of local importance: plague, jungle yellow fever, trypanosomiasis,

leishmaniasis, Rift Valley fever, glanders, melioidosis, cowpox, specific helminthic infections of animal origin, and fungous infections of animal origin. Of fundamental importance is the necessity of exchanging information on reports between the health services and the zootechnical services (livestock and veterinary). Reports of zoonoses should include regular reports from slaughter houses and all laboratories dealing with communicable diseases.

It was pointed out that there are many difficulties in obtaining any sort of information from rural areas where health services are rudimentary or non-existent. In these areas it is not uncommon to find agricultural services more highly developed than health services and the former can be taken advantage of in obtaining information on zoonoses in the area.

In rural areas reporting can be initiated and organized by the following: local veterinarians and auxiliary personnel such as livestock inspectors, vaccinators and the like, farmers groups, agricultural advisers and extension services, public health nurses, sanitarians and other health personnel, religious leaders, village chiefs, and even when necessary local police. The task of adequately informing these individuals and groups with respect to the zoonoses is considered briefly under the heading *Education and training*.

The presence of a zoonosis can be heralded either by a single human sentinel case or by an outbreak of the disease in animals. In the event of a human sentinel case all possible zootechnical services should be warned to investigate the situation among the animals of the area. Conversely when an outbreak of a zoonosis (anthrax, brucellosis, rabies, etc.) occurs in animals the health authorities should take appropriate action with respect to the human population. It is evident that close collaboration between health and agricultural services must be

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As in previous years the World Health Assembly had to award the Leon Bernard Foundation Prize to reward the author of an important contribution to social medicine. The prize was awarded this year to Professor Jacques Parisot (France) "for his outstanding contribution and practical achievements in the field of social medicine."

The President of the Assembly described in the following terms the brilliant career of Professor Parisot:

"this is the fifth occasion on which the Léon Bernard Foundation Prize has been awarded since the award was established exactly 20 years ago. When I read you the names of the four previous prizewinners you will agree that the award of this prize has been reserved for really outstanding achievement in the field of social medicine. The names are: Dr Wilbur A. Sawyer, Dr René Sand, Professor C. E. A. Winslow and Dr Johannes Frandsen. Today Professor Jacques Parisot takes his place in this most distinguished group and in adding his name to those of the others I have mentioned I feel that we are fully maintaining the tradition of excellence previously set."

"Professor Parisot was born in 1882. After brilliantly completing his medical studies his first interest was in a career as pathologist. In 1911 he was appointed Professeur agrégé at the Faculty of Medicine in his native city of Nancy where he taught medical pathology. After the 1914-18 war he began to devote some of his energies to the control of tuberculosis in which he had become interested as a result of Leon Bernard's teaching and in 1920 he became definitely conscious of his real vocation in the field of social medicine. In 1927 Professor Parisot became titular holder of the Chair of Hygiene and Social Medicine and he immediately set about creating the Nancy Institut

regional d'Hygiène with its threefold mission of health activities research and teaching thus foreshadowing a formula the value of which is today universally recognized. By the establishment of the departmental Board of Social Hygiene of which Professor Parisot is still the President he was enabled to extend his health and social activities progressively from tuberculosis control which was his first interest, to the control of venereal diseases to maternal and child health activities to mental health activities and to health education. Above and beyond the control of disease—but with that as his basis—was the broad aim of the creation of that state of complete physical, mental and social well being which twenty years later was to be enunciated in the Constitution of the World Health Organization as the definition of health.

"It is not possible in the time at my disposal to enumerate the very long list of Professor Parisot's decorations and official titles. Nor can I do more than mention a very few of the most characteristic features of his life work which includes forty years teaching of medicine and hygiene and several hundreds of personal publications."

In 1949 Professor Parisot then nearing the end of his professional career was appointed to the highest post, that of Dean of the Faculty of Medicine, Nancy. He has been instrumental in reorganizing and modernizing this medical school and he has endeavoured to build in such a way as to leave to those who come after him an establishment worthy of its renown. He has also set about creating a centre for the occupational and social rehabilitation of physically handicapped persons in the establishment of which the Faculty of Medicine and the social security

improvement in zoonoses control through better use of certain individuals and groups to be found in almost all countries. Experience in many countries has shown that one of the best ways to implement closer co-operation between health and agricultural authorities is to establish a veterinary public health unit within the health services, at the central or federal level, and if possible also at the State provincial, or municipal level.

Education and training

Emphasis was placed on the necessity for better training of all health workers in connexion with rural problems. It was pointed out that in both advanced and under-developed countries there are serious deficiencies in the curricula of medical and veterinary undergraduate schools, as well as of schools of public health giving post graduate training in connexion with the zoonoses and with food control.

Short training courses were indicated as the best means for the education of personnel in rural areas which can be brought into the zoonoses control programmes (veterinary assistants, agriculturists, sanitarians etc.)

In order to assist these persons and allied groups such as farmers organizations and religious leaders, a simple manual on the zoonoses was considered a very useful guide.

Since conditions differ so markedly in various areas of the world pilot projects in a typical rural area were suggested as a means of determining organizational techniques suitable to the country concerned. The control of rabies and hydatidosis was suggested as a good subject for such pilot projects because encouraging results can usually be obtained in the control of these two diseases while at the same time an opportunity is provided to learn and solve organizational questions affecting zoonoses in general.

It was concluded that undergraduate courses in public health should be combined undertakings of medical and veterinary schools, not only with respect to the zoonoses and food control, but also with respect to other aspects of health teaching. Post graduate training in public health should certainly be conducted in combined courses for physicians, veterinarians, sanitary engineers, nurses and other persons entrusted with the health of people.

DOCUMENTATION SUBMITTED FOR THE TECHNICAL DISCUSSIONS AT THE SEVENTH WORLD HEALTH ASSEMBLY

- 1 "Background to Rural Health" by Professor A. Stampar
 - 2 "The Development of Health Units in Rural Areas" by Professor F. Brockington
 - 3 "Rural Sanitation" by Professor M. Petrik
 - 4 "The Zoonoses in their Relation to Rural Health" by Professor K. F. Meyer
 - 5 "Demographic and Health Statistics Relating to Urban and Rural Areas" by Dr. S. Swaroop
 - 6 Select Bibliography on Rural Hygiene
-

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organizations co operate with the administrations concerned—a further example of co ordination of effort

‘Although Professor Parisot made his whole career at Nancy, his activities and particularly his influence have extended to the national and international levels. He became, and still is, adviser to the French Ministries of National Education and of Public Health and Social Security. He is a member of the most important technical committees. Among those of which he is chairman may be mentioned the Standing Committee for the Study of Hygiene and for Health and Social Activities, the governing body of the National School of Public Health, the Administrative Council of the National Institute of Hygiene, the French Committee on Social Service, and the Technical Committee on Health and Social Services and Social Security Organizations. These important posts, which enable Professor Parisot to play a decisive role in the health and social policy of the country as a whole, correspond to his threefold vocation of teacher, investigator and creative worker.

He is also adviser to the Ministry of Foreign Affairs, for in addition to his local, regional and national activities Professor Parisot has made an inestimable contribution in the field of international health activities. As Leon Bernard’s alternate Professor Parisot represented France on the Health Committee of the League of Nations from 1929 onwards. In 1934 he succeeded Leon Bernard on that committee, and in 1937 he became its Chairman. From 1934 to 1939 he was closely associated with the activities of the International Labour Office.

In Europe and in the United States of America he has accomplished a number of technical missions and participated in various study groups and conferences. As chief of the French delegation to the International Health Conference in New York on 22 June 1946 he signed the Constitution of

the World Health Organization. He has led the French delegation to the World Health Assembly each year since 1948. In the same field, he was designated by the French government to serve on the WHO Executive Board, of which he was unanimously elected Chairman in 1951. The Director General of the World Health Organization has also invited him to sit on a number of expert committees, in particular the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel and the Expert Committee on Health Education of the Public.

Professor Parisot’s life work is thus a magnificent example of how achievements in public health and social medicine realized in a comparatively small geographical area—in this case in one of the ninety departments of France—assert their beneficial effects over a wide field on both national and international planes.

In reply Professor Parisot said:

the Leon Bernard Prize is without doubt the highest distinction a medical man can receive in a career devoted to public health and social progress since its award confirms the verdict of competent elements in a world organization.

It was at its meeting of 4 May 1939 that the League of Nations Health Committee, which was instrumental in creating this Foundation in memory of one of its most distinguished members, awarded the prize for the first time to Dr Wilbur Sawyer, Director of the International Health Division of the Rockefeller Foundation. In so doing it honoured at one and the same time the man who obtained the victory over yellow fever and the great Foundation which for a number of years had co-operated in many of the Committee’s undertakings. The World Health Organization has now inherited the right to award the prize and since 1951 the recipients have been successively Dr Rene

Sand Dr Winslow and Dr Frandsen It is a great honour for me to have my name associated with those of such distinguished colleagues Dr Frandsen has accomplished a great and valuable work in Denmark Praise is due to him for this work, and I would also thank him for his kindness to me personally Professor Winslow has always shown me a friendliness which is warmly reciprocated his universal reputation as an eminent public health administrator and active protagonist of health education and of social medicine was still further enhanced by his recent monograph on *The Cost of Sickness and the Price of Health* and by his lecture to the Fifth World Health Assembly on the economic value of preventive medicine

"It is with deep emotion that I come to the name of Rene Sand By his death not only Belgium but the whole world is deprived of an eminent teacher and an enlightened sociologist whose qualities of mind and heart made him a veritable apostle of social medicine who was listened to respected and honoured in all countries and in all circles Many tributes were paid to Rene Sand and his work in particular by WHO in its *Chronicle* In associating myself with that tribute and in assuring our Belgian friends of our faithfulness to his memory I am certain I am interpreting the wishes of all here present

"The honour bestowed on me has how ever another significance in my eyes it has also the spiritual significance that attaches to a memory the memory of the master and friend to whom I was colleague and later successor on the Health Committee You will I am sure understand the desire and the sense of sacred duty which today lead me to evoke the figure of this great man so that you may know him better so that you may see him against the background of the Health Organization of the League of Nations which has now been

revived in a new and greatly expanded form in the World Health Organization

"Léon Bernard was born in 1872 in Lorraine He studied medicine in Paris where his intellectual qualities and capacity for hard work enabled him to rise quickly and brilliantly to the rank of *medecin des hopitaux* and in 1910 of *professeur agrege* in general medicine In the first phase of his scientific career his work was varied betraying the original turn of mind always in search of new and useful outlets and anxious to become conversant with the various branches of medical science with the clinical as well as the laboratory aspects Although he was increasingly interested in tuberculosis he wished before devoting himself particularly to that subject to provide himself with a solid foundation for such specialization As he wrote later 'A man who wishes to engage in some specialized branch of medicine must be thoroughly permeated as it were with general medicine' This is a principle which applies even more today at a time when all kinds of medical specialities are developing and your expert committees on professional education have rightly insisted on it Leon Bernard's studies on the clinical and therapeutic aspects of tuberculosis and on case finding and prevention of the disease have now become classics Because of his enormous contribution to the prevention of this disease—especially the protection of children—he was entrusted in 1917 with the task of directing and organizing the tuberculosis control campaign which was part of the large scale social health programme started in France at the end of the war Appointed titular professor of hygiene and preventive medicine in 1920 and President of the *Conseil supérieur d'Hygiene* his reputation in that field increased both nationally and internationally not only on account of his teaching and scientific studies but also on account of his practical work Nevertheless

organizations co operate with the administrations concerned—a further example of co ordination of effort

Although Professor Parisot made his whole career at Nancy, his activities and particularly his influence have extended to the national and international levels. He became and still is adviser to the French Ministries of National Education and of Public Health and Social Security. He is a member of the most important technical committees. Among those of which he is chairman may be mentioned the Standing Committee for the Study of Hygiene and for Health and Social Activities, the governing body of the National School of Public Health, the Administrative Council of the National Institute of Hygiene, the French Committee on Social Service, and the Technical Committee on Health and Social Services and Social Security Organizations. These important posts which enable Professor Parisot to play a decisive role in the health and social policy of the country as a whole correspond to his threefold vocation of teacher, investigator, and creative worker.

“He is also adviser to the Ministry of Foreign Affairs for in addition to his local regional and national activities Professor Parisot has made an inestimable contribution in the field of international health activities. As Leon Bernard's alternate Professor Parisot represented France on the Health Committee of the League of Nations from 1929 onwards. In 1934 he succeeded Leon Bernard on that committee and in 1937 he became its Chairman. From 1934 to 1939 he was closely associated with the activities of the International Labour Office.

In Europe and in the United States of America he has accomplished a number of technical missions and participated in various study groups and conferences. As chief of the French delegation to the International Health Conference in New York on 22 June 1946 he signed the Constitution of

the World Health Organization. He has led the French delegation to the World Health Assembly each year since 1948. In the same field, he was designated by the French government to serve on the WHO Executive Board, of which he was unanimously elected Chairman in 1951. The Director General of the World Health Organization has also invited him to sit on a number of expert committees in particular the Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel, and the Expert Committee on Health Education of the Public.

‘Professor Parisot's life work is thus a magnificent example of how achievements in public health and social medicine realized in a comparatively small geographical area—in this case in one of the ninety departments of France—assert their beneficial effects over a wide field on both national and international planes.

In reply Professor Parisot said

the Leon Bernard Prize is without doubt the highest distinction a medical man can receive in a career devoted to public health and social progress, since its award confirms the verdict of competent elements in a world organization.

It was at its meeting of 4 May 1939 that the League of Nations Health Committee which was instrumental in creating this Foundation in memory of one of its most distinguished members, awarded the prize for the first time to Dr Wilbur Sawyer, Director of the International Health Division of the Rockefeller Foundation. In so doing it honoured at one and the same time the man who obtained the victory over yellow fever, and the great Foundation which for a number of years had co operated in many of the Committee's undertakings. The World Health Organization has now inherited the right to award the prize and since 1951 the recipients have been successively Dr Rene

Sand Dr Winslow and Dr Frandsen It is a great honour for me to have my name associated with those of such distinguished colleagues Dr Frandsen has accomplished a great and valuable work in Denmark Praise is due to him for this work, and I would also thank him for his kindness to me personally Professor Winslow has always shown me a friendliness which is warmly reciprocated his universal reputation as an eminent public health administrator and active protagonist of health education and of social medicine was still further enhanced by his recent monograph on *The Cost of Sickness and the Price of Health* and by his lecture to the Fifth World Health Assembly on the economic value of preventive medicine

It is with deep emotion that I come to the name of René Sand By his death not only Belgium but the whole world is deprived of an eminent teacher and an enlightened sociologist whose qualities of mind and heart made him a veritable apostle of social medicine who was listened to respected and honoured in all countries and in all circles Many tributes were paid to René Sand and his work, in particular by WHO in its *Chronicle* In associating myself with that tribute and in assuring our Belgian friends of our faithfulness to his memory I am certain I am interpreting the wishes of all here present.

The honour bestowed on me has however another significance in my eyes it has also the spiritual significance that attaches to a memory the memory of the master and friend to whom I was colleague and later successor on the Health Committee You will I am sure understand the desire and the sense of sacred duty which today lead me to evoke the figure of this great man so that you may know him better so that you may see him against the background of the Health Organization of the League of Nations which has now been

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phthisiology remained his favourite subject. He greeted the discovery of BCG by his friends Calmette and Guérin with enthusiasm and defended it ardently and convincingly, he also established the fundamental principles, which still hold good today, on which rational tuberculosis control must be based. In 1928 he was appointed to the first French Chair of clinical tuberculosis. His wide experience in hygiene and phthisiology and his abilities as organizer and promoter enabled him to make of this clinic a focus for all those in national or international life who were interested in these vital problems.

In addition, being a man with a deep sense of duty and great goodness of heart as well as a distinguished physician, he actively supported the social services and the various forms of assistance to the sick. As one of his closest colleagues, our friend Professor Robert Debre wrote 'Léon Bernard, possessed of a brilliant mind and master of the right and eloquent phrase, made the relief of human suffering his constant goal. He gathered around him a veritable constellation of students and friends who knew that his somewhat cold exterior hid a never failing devotion and a character of unswerving integrity.'

It was for these reasons that Leon Bernard delegated by the French Government to the Health Committee of the League of Nations worked for that body from the time it was established and became one of its most eminent members. From 1921 on he was a member of the Epidemic Commission, which was set up as an emergency measure by the League of Nations and which was the earliest form of the Health Organization. Subsequently, he took an active part in its development in various fields, among which were the control of malaria and

the various communicable diseases—bilharziasis, leprosy, tuberculosis, syphilis—biological standardization, health statistics, international nomenclature of causes of death, housing, nutrition, control of narcotic drugs, maternal and child health, etc.

"Leon Bernard not only played an eminent role in France, but in almost every part of the world he successfully pleaded in favour of modern methods of teaching medicine—health protection and of social progress—always in the service of humanity. It is therefore understandable that on his death in 1934, the Health Committee of the League of Nations decided to perpetuate his memory by founding the prize which bears his name.

Today, circumstances have brought about a situation whereby the representative of a young African republic which is rapidly rising both economically and socially holds the office of President of this Assembly, and has handed to a university professor of old Europe the prize with which you have honoured him. Does not this symbolize the progress and unity we work and hope for the attempt not by political but by purely human, loyal, fruitful alliance, to bring to all men more health, well being and prosperity in their lives and also greater happiness and security in a peaceful world?

In these particularly distressing times when people who at the bottom of their hearts wish to draw closer together have difficulty in finding a common meeting ground, what better could they find than our work which brings together so much knowledge and goodwill? Is it not from this common endeavour that a new conception of life will spring and spread throughout the world, capable it may be hoped of overcoming one day the old and still formidable cult of force and national egoism?

AWARD OF THE DARLING FOUNDATION PRIZE

The Darling Foundation Prize which is awarded to the author of an original work on the pathology etiology therapy or prophylaxis of malaria upon recommendation of the WHO Expert Committee on Malaria was awarded this year for the fourth time. The recipients were Dr G Robert Coatney (United States of America) and Professor George Macdonald (Great Britain).

The President of the Assembly briefly outlined Dr Coatney's career.

"Dr G Robert Coatney who is a citizen of the United States of America was born in May 1902, and is now on the staff of the Laboratory of Tropical Diseases in the National Microbiological Institute of the Public Health Service of that country. He holds the B.A. and M.A. degrees of the University of Nebraska and a Ph.D. degree of Iowa State. He started his career as professor of biology and zoology in Nebraska from 1926 to 1938. He was then appointed protozoologist in the Public Health Service of the United States to which he is still attached. His scientific work has dealt with blood protozoa and particularly with malaria parasites and with the chemotherapy of malaria in connexion with which he has published a large number of important works.

As Dr Coatney was unable to attend the Assembly in person the President presented the prize to the chief delegate of the USA to be handed over later to Dr Coatney.

The President then summarized the career of Professor Macdonald.

"Professor George Macdonald is a British subject born in June 1903. He has a degree of M.D. and D.T.M. of the Liverpool School of Tropical Medicine and Hygiene and has a diploma of public health of the

University of London. He started his career as a research worker in Sierra Leone in 1924 and followed this with similar work in India and Assam between 1929 and 1937. After a short assignment to malaria control in Ceylon he joined the Royal Institute of Tropical Hygiene in London of which he has been the Director since 1945. He has been professor of tropical medicine in the London School of Hygiene and Tropical Medicine since 1946. His scientific work deals generally with tropical hygiene and public health and in particular with epidemiology and the control of malaria."

Receiving the award Professor Macdonald in a short speech paid tribute to the man it commemorates.

"Samuel Taylor Darling in whose memory you Sir have just given me this award was a great man. At a time when in a flash of enthusiasm at the beginning of this century it might have been thought that we knew enough Samuel Taylor Darling set up a tradition of continuing inquiry and research constantly focused on one single primary objective—the control of disease particularly the control of malaria. He carried that standard aloft until his untimely death in the service of the League of Nations. In that way he set the form of the attack against malaria and against some other tropical conditions for much of this century. He is commemorated by some material matters notably by a small stone in very beautiful surroundings at Brummana in the Lebanon and in this award which you have just given me. But he is particularly commemorated in the minds of all people who believe that the improvement of the health of tropical peoples depends on continuing scientific inquiry.

So the World Health Organization when it passed its resolution some seven years ago to attempt the elimination of malaria as a public health problem through out the world, made itself pre eminent amongst the organizations which have attempted to control this disease. It was a brave resolution—a brave resolution possible only to an organization which was young and was feeling its strength. But the passage of events since that time has shown that it did not overestimate its strength and the campaigns which have been nurtured spon

sored and encouraged by this organization have gone a very long way already to achieving that object, having eliminated malaria as a public health problem from very great tracts of the world and have demonstrated that the achievement of the full ambition is a perfect possibility.

'It is a great honour to be given this award in the name of Samuel Taylor Darling and by the World Health Organization. I accept it humbly as a representative of the many scientific workers who have the same ambition.

DR JOSEPH N TOGBA

President of the Seventh World Health Assembly



Dr Joseph N Togba was born in Sass town, Sinoe County, Liberia in 1915. He studied at Friends University in Wichita, Kansas, and he obtained his medical degree at Meharry Medical College Nashville Tennessee, in 1944. Later, he specialized in public health at Harvard University. Appointed Physician to the Liberian Government in 1946, Dr Togba attended as the Liberian delegate, the International Health Conference held in New York in June of the same year. A member of the Interim Commission of the World Health Organization from 1946 to 1948, he was appointed Director of Public Health and Sanitation of the Republic of Liberia in 1947 and Director General of the National Public Health Service in 1953. Since the establishment of the World Health Organization, he has represented his country at each World Health Assembly. During his years of close association with WHO, he has held a number

of high offices including the chairmanship of the first session of the Regional Committee for Africa in 1951, the vice chairmanship of the Executive Board in 1951 and the vice presidency of the Fifth World Health Assembly in 1952. Dr Togba is also Chairman of the Medical Board of Liberia and President of the Liberian Medical Association.

MASS BCG VACCINATION CAMPAIGN

Series of Reports on Vaccination of 14 Million Persons Concluded

One of the responsibilities of the Tuberculosis Research Office of the World Health Organization has been to assemble and prepare for publication statistics of the mass BCG vaccination programmes conducted by the International Tuberculosis Campaign (ITC). This task has now been completed with the publication of *BCG Vaccination in Finland and the Finnish Vaccination Index* (see p. 244).

The International Tuberculosis Campaign grew out of an association formed very soon after the Second World War by the Danish Red Cross, the Norwegian Relief for Europe and the Swedish Red Cross to undertake mass BCG vaccination in several European countries as an emergency measure against tuberculosis. In March 1948 the United Nations International Children's Emergency Fund (UNICEF) responsible for relief work among children and adolescents in war-torn countries joined the three Scandinavian voluntary organizations to assist in conducting mass BCG vaccination on an international scale. It was to this partnership that the name International Tuberculosis Campaign was given.

Before it officially turned over its activities to WHO and UNICEF in June 1951 the ITC assisted 23 countries in carrying out mass BCG vaccination campaigns, tuberculosis-testing a total of nearly 30 million persons and giving BCG vaccination to almost 14 million. During this three-year period an international staff of over 200 doctors and nearly 300 nurses, as well as over 1 000 national doctors, nurses and BCG technicians participated in the programme. In each campaign the ITC generally estab-

lished the pertinent medical, organizational and statistical methods and assisted with personnel and supplies until the population in the age groups aimed at by the mass campaign had been covered. Where the national government had plans for continuance of BCG vaccination, the ITC left the necessary equipment used during the international phase. The national government normally paid such campaign expenses as could be met in the currency of the country. The total ITC expenditure amounted to approximately \$4 942 000; national expenditures are estimated to have equalled this amount.

Not surprisingly, the unprecedented scale and geographical coverage of these vaccination campaigns gave rise to a good many problems for which there were no answers. The need for a systematic and carefully controlled investigation of BCG vaccine and vaccination became increasingly apparent. Therefore, at the invitation of UNICEF and ITC in the fall of 1948, a field survey was made and a report was presented to the Joint Health Policy Committee of UNICEF and WHO on the possibilities for scientific research in connexion with the mass BCG vaccination programmes. As a result, the World Health Organization established the WHO Tuberculosis Research Office in February 1949 in Copenhagen.

One of the first responsibilities that the Tuberculosis Research Office agreed to undertake was to direct the collection of BCG-campaign statistics and to analyse and prepare the material for publication. The Finnish report is the last in the series of statistical publications documenting the work

of the ITC in 17 countries. As shown in the accompanying table, these reports cover 22 million persons tuberculin tested and 11 million vaccinated—three fourths of the total number tested and more than 80% of those vaccinated during the entire ITC programme. No reports have been prepared

NUMBER OF PERSONS GIVEN TUBERCULIN TEST OR BCG VACCINATION IN MASS CAMPAIGNS ORGANIZED IN 23 COUNTRIES BY THE INTERNATIONAL TUBERCULOSIS CAMPAIGN

Country	Tested	Vaccinated
Documented		
1 Czechoslovakia	3 407 318	2 084 271
2 Poland	4 729 033	2 284 829
3 Syria	262 285	115 582
4 Israel	362 298	208 851
5 Malta	54 968	38 770
6 Tunisia	601 502	265 683
7 Ecuador	646 702	346 242
8 Austria	654 293	452 374
9 Morocco	2 207 507	1 009 89
10 Tangiers	21 089	7 493
11 Greece	1 464 627	1 009 804
12 Yugoslavia	3 010 238	1 554 862
13 Egypt	2 104 311	661 128
14 Algeria	1 670 665	675 664
15 Finland	750 000	362 000
16 Lebanon	43 463	28 311
17 Palestine Refugees	211 323	149 137
Total	22 207 622	11 253 580
Not documented		
1 Italy	12 550	6 576
2 Mexico	179 975	83 880
3 Hungary	1 952 024	771 853
4 Ceylon	306 707	122 764
5 India	4 068 515	1 351 546
6 Pakistan	949 987	284 500
Total	7 469 758	2 621 119
Grand total (23 countries)	29 677,380	13 874 709

for the campaigns in six countries. In Italy and Mexico the ITC assisted in limited demonstration programmes only. In Hungary, ITC participation was terminated prematurely, in Ceylon, India, and Pakistan only a small proportion of the population had been covered when the campaigns were taken over either by the national government or by WHO and UNICEF.

In most of the countries the setting up of statistical reporting methods and the training of national personnel in the techniques of maintaining the records were the responsibility of an ITC statistician. Data on persons tested and vaccinated were recorded on individual cards in the field and sent to the central campaign office of the country. From the thousands, sometimes millions of individual cards the statistical staff made tabulations according to age and sex of the tested and vaccinated by district, as each district in a campaign was completed. These preliminary data, known by the field staff as the D form statistics, were forwarded to the Tuberculosis Research Office for analysis. These D form statistics have provided most of the material for the documentation of the campaigns. In spite of the extent and complexity of the programme the data are fairly uniform and comparable.

The reports follow the same general pattern. A brief outline of the campaign is given, the development and special problems, the extent of national and international participation and plans for continuing BCG vaccination. A discussion of the completeness and accuracy of the statistical material is also included, followed by tabular analysis and summary discussion of the D form statistics. Tabulations of the numbers of persons tested and vaccinated and the percentages of tuberculin positives are given in detail by age, sex, and administrative division of the country.

Four of the reports—those from Syria, Ecuador, Greece, and Egypt, also include

a separate section on post vaccination testing. In these countries it was possible to arrange for specially trained teams to go back and retest sample groups of the vaccinated population. The sample groups were selected by geographical area of the country and by batch of vaccine to obtain as broad a picture of post vaccination sensitivity as possible. In all four countries the retesting results showed that the allergy in children vaccinated in the mass campaign was appreciably lower than expected. The reasons for such results are not yet clear and certainly require further assessment work.

Individually the reports should contribute critically to the tuberculosis control work of the country. In some countries the mass campaign statistics provide the first tuberculin sensitivity figures available in countries with little national tuberculosis morbidity and mortality statistics; the tuberculin sensitivity figures stand as the most reliable yardstick of the situation to date. Together the series of reports provides a permanent record of what is probably the largest, most uniformly carried out immunization programme ever done. And its value may well increase with time for the mass vaccination programmes have distorted the pattern of tuberculin sensitivity for at least a generation to come. Contrary to general belief it is not possible to differentiate with any precision between natural tuberculin sensitivity and BCG induced sensitivity. Thus indexes of tuberculosis prevalence based on tuberculin test results will for many years be hopelessly distorted by the large vaccinated population. In future epidemiological studies of tuberculosis in any of the International Tuberculosis Campaign countries it will be of the utmost importance to have the tuberculin sensitivity figures at the time of the mass campaign and detailed accurate statistics on the population vaccinated. In this respect the reports may well serve as the basis of and as a source of reference for

future tuberculosis control activity in those countries.

The Finnish report differs from the other country reports just as the campaign differed from other campaigns. Finland was the first of the 23 countries assisted by the ITC in a mass BCG vaccination campaign; the campaign was already under way when the ITC joined and the operation of the programme remained in the hands of the local authorities. The ITC, the Tuberculosis Research Office and the Finnish authorities however recognized the possibility that the Finnish campaign might offer an opportunity not afforded by any other campaign to learn something about the course of tuberculosis in a general population after a mass BCG programme had been carried out. This opportunity arose from the coincidence of several factors: at the time of the campaign Finland still had a large number of tuberculosis deaths (an annual rate of about 150 per 100 000 population). Moreover within 18 months a large proportion of the population 0-25 years old had been given BCG vaccination and individual records for persons tested and vaccinated were assumed to be available and complete. Reports of current deaths from tuberculosis could be made available and trends in tuberculosis death rates could be evaluated in the light of mortality statistics available from 1878 onwards.

It was therefore decided to establish a special co-operative research project in Finland which might be expected to give some indication of the effect of the mass campaign through a detailed study of tuberculosis mortality in the vaccinated tuberculin positives and the general population, against a background of mortality trends over a period of many years. For this purpose the so-called Finnish Vaccination Index was prepared: a name file recording tuberculin tests and vaccinations of some 850 000 persons. By matching death certi-

ficates against the Vaccination Index in the coming years, it should be possible to determine, fairly accurately who among those dying of tuberculosis had been vaccinated with BCG, and who had been naturally positive to tuberculin and therefore not vaccinated. It has been clearly recognized from the beginning that the project could not provide decisive evidence of the effect of BCG on tuberculosis morbidity and mor-

talidity, such evidence requires that a group of tuberculin negatives deliberately not be vaccinated, to serve as controls. No such group could be segregated in Finland or indeed, in any of the mass campaign countries. But if anything can be learned about the effect of a mass BCG vaccination campaign on the tuberculosis mortality in a general population it should be in Finland that this is possible.

LIST OF REPORTS ON MASS BCG VACCINATION PUBLISHED BY INTERNATIONAL TUBERCULOSIS CAMPAIGN*

- 1 *Mass BCG vaccination in Czechoslovakia 1948-49 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Jørgen Nyboe* Copenhagen 1950 103 pages
- 2 *Mass BCG vaccination in Poland 1948-49 with special reference to statistics on tuberculin testing and BCG vaccination by I-Chin Yuan & Jørgen Nyboe* Copenhagen 1950 134 pages
- 3 *Mass BCG vaccination in Syria 1950 with special reference to statistics on BCG vaccination and pre and post vaccination allergy by I Chin Yuan & Jørgen Nyboe* Copenhagen 1951 44 pages
- 4 *Mass BCG vaccination in Israel 1949-50 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Mette Søegaard* Copenhagen 1951 34 pages
- 5 *Mass BCG vaccination in Malta 1950 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Mette Søegaard* Copenhagen 1951 28 pages
- 6 *Mass BCG vaccination in Tunisia 1949-51 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Jørgen Nyboe* Copenhagen 1952 42 pages
- 7 *Mass BCG vaccination in Ecuador 1950-51 with special reference to statistics on BCG vaccination and pre and post vaccination allergy by I Chin Yuan & T Z Henniksen* Copenhagen 1952 41 pages
- 8 *Mass BCG vaccination in Austria 1948-50 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & E E. Petersen* Copenhagen, 1952. 39 pages
- 9 *Mass BCG vaccination in Morocco and Tangier 1949-51 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Mette Søegaard* Copenhagen 1952 42 pages
- 10 *Mass BCG vaccination in Greece 1948-51 with special reference to statistics on BCG vaccination and pre and post vaccination allergy by I Chin Yuan & Jørgen Nyboe* Copenhagen 1952 56 pages
- 11 *Mass BCG vaccination in Yugoslavia 1948-51 with special reference to statistics on tuberculin testing and BCG vaccination by I Chin Yuan & Mette Søegaard* Copenhagen 1952 57 pages
- 12 *Mass BCG vaccination in Egypt 1949-52 with special reference to statistics on BCG vaccination and pre and post vaccination allergy by I Chin Yuan & Jørgen Nyboe* Copenhagen, 1953. 45 pages
- 13 *Mass BCG vaccination in Algeria 1949-52 with special reference to statistics on tuberculin testing and BCG vaccination by Jørgen Nyboe & Mette Søegaard* Copenhagen 1953 49 pages
- 14 *BCG vaccination in Finland and the Finnish Vaccination Index by Erik Iversen & Erik Hansen* Copenhagen 1953 41 pages
- 15 *Lebanon Country Report In Second Annual Report of the International Tuberculosis Campaign* Copenhagen 1950 Pages 248-255
- 16 *Palestine Refugees Country Report In Second Annual Report of the International Tuberculosis Campaign* Copenhagen 1950 Pages 261-271

* A limited number of these reports are available in English only. They can be obtained on request to the Tuberculosis Section, World Health Organization, Palais des Nations, Geneva, Switzerland.

Review of WHO Publications

THE PRESENT STATUS OF PENICILLIN THERAPY *

In 1854 just a century ago Paul Ehrlich was born. Through his discovery of effective chemotherapy in the management of syphilis (1910) new vistas for the alleviation of human suffering were opened. The era of metal chemotherapy which followed has only recently been superseded by the antibiotic period which began with the discovery of penicillin by Sir Alexander Fleming 25 years ago and which gained momentum during the Second World War. While Ehrlich's discovery of the therapeutic effect of Salvarsan was the result of his quest for a one injection treatment in syphilis this goal was only to be reached in recent years with the introduction of the antibiotics. Starting with the demonstration of the lethal effect of penicillin on *Treponema pallidum* by John Mahoney (1944) and with the subsequent discovery of long acting repository penicillin salts or preparations a complete reorientation has taken place in the treatment of syphilis and the other treponematoses during the last decade. It is now possible effectively to treat these infections in their early stages with single injections of the antibiotic and to arrest them in their latent and late stages.

As treponemes have not shown so far any resistance to penicillin the widest possible use of this antibiotic has been advocated by many health authorities in recent years. In this field the World Health Organization has encouraged international activities by holding symposia on syphilis (Paris 1950, Helsinki 1950) and on yaws (Bangkok 1952) in an

effort to further the exchange of scientific information. It has been shown that penicillin can now be applied to cases and contacts on a mass scale in populations where the treponematoses are endemic and in recent years many health administrations have organized effective mass campaigns against syphilis and yaws. The epidemiological basis and the prospects for such programmes have been described in a series of publications by WHO in recent years.

While the introduction of penicillin as a practical inexpensive drug has facilitated syphilis control a warning against over optimism was given at the Technical Discussions at the Sixth World Health Assembly¹ where it was pointed out that while one element in the control of the treponematoses has been simplified further emphasis must be put on case finding and other aspects of control if ultimate success in eliminating syphilis is to be attained.

Volume 10 number 4 of the *Bulletin of the World Health Organization* is devoted to outlining the present status of penicillin therapy in syphilis and it is on the results achieved in the treatment of syphilis that the application of penicillin to the other treponemal infections is based. At the same time some examples are given of types of activities which WHO may be called on by governments to undertake as a preliminary to the organization of broader control programmes. No attempt has been made to discuss the experience of health administrations in these broader public health programmes for this the reader is referred to a

This is reproduced with slight changes, from the introduction to recent number devoted to syphilis, of the *Bulletin of the World Health Organization*.

recent issue of the *Chronicle of the World Health Organization*²

The authors of the first paper in this *Bulletin*—O Idsoe, T Guthe, S Christiansen P Krag & J C Cutler—outline the basis for penicillin treatment in syphilis the effect of time dosage relationships the choice of penicillin preparations and modes of administration they also discuss the reaction of the host to infection with *Treponema pallidum* A special section is devoted to the question of syphilis in the incubation period and the prophylactic and abortive treatment of contacts

Possible advantages of adjuvant metal therapy in penicillin treatment of early syphilis are discussed in a second paper by J K Shafer, L S Usilton & E V Price, on the basis of long term studies carried out by the Public Health Service in the USA since 1945

It is evident from the literature that the treatment of syphilis differs widely in the clinics of different countries and indeed within the same country While it is believed that the introduction of penicillin will eventually permit more uniformity, no world wide study of the preparations schedules, and treatment regimens used had been made up to 1953 On the basis of material collected by WHO in that year R R Willcox analyses the information collected from 277 leading university and venereal disease clinics

in all WHO regions illustrating the current trend towards general acceptance of penicillin alone in the treatment of early syphilis

In a fourth paper the preliminary results of the use of a new repository penicillin salt—benzathine penicillin G (N N'-dibenzylethylenediamine dipenicillin G)—in the treatment of early infectious syphilis are presented by J K. Shafer & C A Smith. This salt is now available in aqueous suspension and may obviate the need for the use of repository PAM preparations containing procaine and oil (to which some persons are allergic) in clinic practice in urban areas With this salt treponemicidal blood levels of penicillin can be obtained of longer duration and with lower doses than is the case with PAM, and the initial results in secondary syphilis are encouraging So far, however this preparation has not been shown to be practical in mass programmes in rural areas where the work is carried out by mobile field teams

In two other papers, aspects of the problem as it presents itself to the health administrations and WHO are illustrated The paper by S Christiansen points to the type of data and the multiplicity of information sought by a WHO consultant in order to appraise the nature and extent of the syphilis problem in a country (Turkey) while that by A A El Ghoroury on the syphilis problem in Saudi Arabia brings out some of the features of field surveys in a national syphilis control programme of a limited nature

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New Series of Cholera Studies

The first of a series of cholera studies by Dr R Pollitzer appeared in Volume 10 number 3 of the *Bulletin of the World Health Organization* issued recently In this study Dr Pollitzer outlines the history of the disease from its earliest recorded appearance up to 1923 and describes its geographical distribution He indicates the origins and main routes of the six great pandemics and discusses the possible causes of the variations in mortality which accompanied them This series of studies will later be published by WHO as a monograph on cholera in the same way as Dr Pollitzer's work on plague which appeared earlier this year

CURRENT PROGRESS IN RABIES RESEARCH *

Since Pasteur's introduction in 1885 of prophylactic vaccination against rabies in man relatively few real innovations in this field have occurred. However since the First World War several new departures in rabies research have produced results which have greatly influenced the handling of the rabies problem. Among these are modifications in methods of vaccine preparation and potency testing, the application of antirabies hyperimmune serum in the prophylaxis of rabies in man and the mass vaccination of dogs including the use of living modified virus vaccine produced in chicken embryos for the control of rabies in animals.

It is interesting to note that antirabies serum was first proposed as early as 1889 and tried on a very limited scale after 1911 but because of difficulties in evaluation and a negative attitude to this idea the use of serum remained practically dormant until fairly recently. Careful studies in laboratory animals started in 1936 and intensified in the past few years have shown almost conclusively the value of serum in rabies prophylaxis, and on the basis of these results the WHO Expert Committee on Rabies in its second report¹ advocates the use of serum under specified circumstances. Similarly chicken-embryo vaccine has been subjected to detailed study in the laboratory and in the field and now occupies an important position in the mass vaccination of dogs for rabies control in many countries.

Research on rabies has thus received a great stimulus and is now being actively pursued in many leading laboratories not

only from the point of view of possible practical application against the disease itself but also for the interesting insight obtained into biological processes in general.

Volume 10 number 5 of the *Bulletin of the World Health Organization* presents a selection of the communications to the section on rabies of the Sixth International Congress for Microbiology held at Rome in September 1953 and gives a picture of recent developments in this field.

Dr Hilary Koprowski describes the biological modifications of rabies virus resulting from its adaptation to chicken embryo and the results of inoculation of animals with this adapted strain.

Several of the contributors discuss the prevention of rabies in animals. Dr H. N. Johnson compares the duration of immunity in dogs inoculated with either phenolized vaccine or chicken-embryo adapted Flury strain. The mass vaccination of dogs as a means of control is dealt with in two articles. Dr C. W. Wells describes the results obtained in Malaya while Drs M. M. Kaplan, Y. Goor & E. S. Tierkel report those of a field demonstration in Israel. The ecology of rabies in Southern Rhodesia where domestic dogs and wild animals play the chief role in transmitting the infection is described by Dr J. S. Adamson. Dr Hermann Heil summarizes the situation in Austria. Dr P. J. G. Plummer draws attention to the huge reservoirs of infection among wildlife in Canada and Dr Victor Carneiro outlines the special problem presented in Latin America by bat transmission of the disease.

The prevention of rabies in man is considered from various aspects. Dr Karl Habel emphasizes the advantages of antirabies serum used either alone or in conjunction

* This is reproduced with slight changes from the introduction to a recent issue devoted to rabies of the *Bulletin of the World Health Organization*.

W.H.O. Bull. Org. 10: 5, 1954, 82.

The authors of the first paper in this *Bulletin*—O Idsoe, T Guthe, S Christiansen, P Krag & J C Cutler—outline the basis for penicillin treatment in syphilis, the effect of time dosage relationships the choice of penicillin preparations, and modes of administration, they also discuss the reaction of the host to infection with *Treponema pallidum*. A special section is devoted to the question of syphilis in the incubation period and the prophylactic and abortive treatment of contacts.

Possible advantages of adjuvant metal therapy in penicillin treatment of early syphilis are discussed in a second paper, by J K Shafer, L S Usilton & E V Price on the basis of long term studies carried out by the Public Health Service in the USA since 1945.

It is evident from the literature that the treatment of syphilis differs widely in the clinics of different countries and indeed within the same country. While it is believed that the introduction of penicillin will eventually permit more uniformity, no world wide study of the preparations, schedules and treatment regimens used had been made up to 1953. On the basis of material collected by WHO in that year, R R Willcox analyses the information collected from 277 leading university and venereal disease clinics

in all WHO regions, illustrating the current trend towards general acceptance of penicillin alone in the treatment of early syphilis.

In a fourth paper, the preliminary results of the use of a new repository penicillin salt—benzathine penicillin G (*N,N'*-dibenzylethylenediamine dipenicillin G)—in the treatment of early infectious syphilis are presented by J K Shafer & C A Smith. This salt is now available in aqueous suspension and may obviate the need for the use of repository PAM preparations containing procaine and oil (to which some persons are allergic) in clinic practice in urban areas. With this salt treponemocidal blood levels of penicillin can be obtained of longer duration and with lower doses than is the case with PAM, and the initial results in secondary syphilis are encouraging. So far, however this preparation has not been shown to be practical in mass programmes in rural areas where the work is carried out by mobile field teams.

In two other papers, aspects of the problem as it presents itself to the health administrations and WHO are illustrated. The paper by S Christiansen points to the type of data and the multiplicity of information sought by a WHO consultant in order to appraise the nature and extent of the syphilis problem in a country (Turkey) while that by A A El Ghoroury on the syphilis problem in Saudi Arabia brings out some of the features of field surveys in a national syphilis control programme of a limited nature.

² *Ch on Wld Hlth Org* 1954 8 37

New Series of Cholera Studies

The first of a series of cholera studies by Dr R. Pollitzer appeared in Volume 10 number 3 of the *Bulletin of the World Health Organization* issued recently. In this study Dr Pollitzer outlines the history of the disease from its earliest recorded appearance up to 1923 and describes its geographical distribution. He indicates the origins and main routes of the six great pandemics and discusses the possible causes of the variations in mortality which accompanied them. This series of studies will later be published by WHO as a monograph on cholera in the same way as Dr Pollitzer's work on plague which appeared earlier this year.

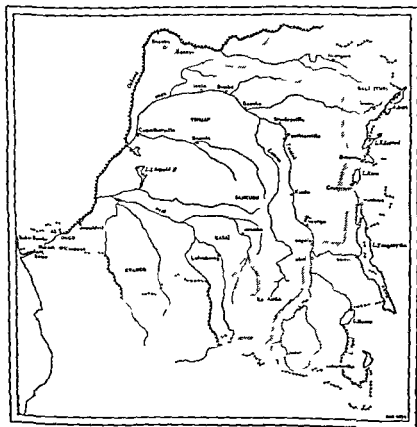
BILHARZIASIS IN THE BELGIAN CONGO

Bilharziasis—one of the most widespread incapacitating diseases—is a very considerable problem in many countries and has for many years been a subject of international concern. Control measures must be based on a knowledge of the distribution of the disease and WHO has therefore for several years initiated or supported a number of bilharziasis surveys in Africa. Consultants have undertaken extensive studies making

available knowledge that must prove of great value to epidemiologists and public health workers. The first of a series of reports on this subject has recently appeared in the *Bulletin of the World Health Organization*¹ it is written by J. Gillet and J. Wolfs and deals with bilharziasis in the Belgian Congo and Ruanda Urundi. It is to be followed by

Bull. Wld. Hlth. Org. 1954 10 315

FIG 1 DISTRIBUTION IN THE BELGIAN CONGO OF BILHARZIASIS
CAUSED BY *S. MANSONI*



with vaccine—a combination which reduces the amount of vaccine necessary, and thus the risks of paralytic accidents. Dr N Veeraraghavan reports the results in India of treatment with phenolized vaccine, and analyses a parallel series of cases allowing of comparison of mortality in treated and untreated individuals. Drs M Baltazard & M Ghodssi, on the basis of observations in Iran, point out the inadequacy of vaccination in preventing the development of rabies after severe wolf bites, and indicate the directions in which future research would be desirable. The local treatment of wounds with chemical substances, such as fuming nitric acid soap emulsions, and Zephiran, is considered by Drs Howard J Shaughnessy & Joseph Zichis and the inactivation of virus by agents of the nitrogen mustard or mustard like type is investigated by Drs H M Powell & C G Culbertson. Drs Marjorie P Schwab, John P Fox, Donald P Conwell & Thomas A Robinson draw a comparison between the Flury strain and Harris type vaccines in producing antibodies in man. Paralytic post vaccination accidents are analysed by Dr George A Jervis in relation to the phenomenon of allergic encephalitis induced experimentally in animals. To close the question 'Can man be protected against rabies?' is put by Dr K F Meyer, who concludes that, given effective education of the public and the widespread use of canine mass vaccination, human rabies is a preventable disease.

* * *

The problem of rabies has occupied the attention of WHO for the past five years. A WHO Expert Committee on Rabies was convened in 1950 to review the prophylactic methods applicable to human beings and

animals while at its second session in September 1953 the committee examined the results of research and other advances in the control of rabies during the intervening three years. Such research included WHO-sponsored laboratory and field trials with hyperimmune serum and different vaccines for the prevention of rabies in man, and investigations on the use of the chicken embryo adapted living avianized vaccine for the control of rabies in dogs, and on the local treatment of bite wounds. The reports of the Expert Committee on Rabies² deal with these and other questions of importance in this field and serve as a valuable guide to health and veterinary officials for the control of the disease.

WHO receives many requests for advice on laboratory techniques in rabies. As a result of the need for this kind of information a monograph entitled *Laboratory Techniques in Rabies*³ has recently been published. Three of the papers presented at the Sixth International Congress for Microbiology—those by Dr E S Tierkel, Dr A Komarov, and Drs D d'Antona & E Falchetti—appear as sections 2, 8 and 17, respectively in the monograph, and consequently are not included in this number of the *Bulletin*. The monograph contains detailed instructions on laboratory techniques, methods of vaccine production, vaccine potency tests and the production of hyperimmune serum.

In presenting these publications devoted to the problem of rabies WHO hopes to make more widely known the most valuable discoveries of recent years and to stimulate interest in both academic and technical research on this disease.

² *Wld Hlth Org techn Rep Se* 1950 28 1954 82

World Health Organization (1954) *Laboratory techniques in rabies*. Geneva (World Health Organization Monograph Series No 23). Price £1 \$3.00 Sw fr 12—(paperbound) or £1.5s \$4.00 Sw fr 16—(clothbound)

toms are found, however one of two main syndromes is usually observed either of the liver and spleen or intestinal. Only the larger species of *Planorbis* have so far been shown to be intermediary hosts of *S. mansoni*.

The first mention made by the medical services of urinary bilharziasis in the Belgian Congo occurred in 1925 in Katanga where the disease later became endemic. The main vector of *S. haematobium* is *Bulinus (Physopsis) africanus* but although this snail is widespread in the territory urinary bilharziasis is largely restricted to two foci: Katanga in the south-east and the Lower and Middle Congo in the west (fig. 2). It does not generally have consequences more serious than anaemia.

S. intercalatum usually results in intestinal bilharziasis, but ova have been found to occur although rarely in both stools and urine. The disease which is endemic along the Congo-Lualaba valley is not frequently serious and responds rapidly to treatment.

After some discussion of parasitological

and serological diagnosis the authors consider various treatment methods all of which require a long period of observation of the patient after treatment for proper evaluation. The use of potassium antimonytartrate is the most frequent form of treatment for cases without complications but serious cases do not respond well to this and generally require a period of protein and vitamin treatment followed by the administration of some better tolerated antimony derivative.

In theory the best means of prevention would be the education of the population of the Belgian Congo not to dispose of its faecal wastes into the waterways in the immediate vicinity of villages but tradition dies hard and this cannot be expected to give results in the near future. In the meantime other forms of prevention must be applied according to the circumstances. These forms include prophylactic emetic treatment, the supply of safe drinking water to the larger population centres and chemical and biological control of the vector molluscs.

TUBERCULOSIS MORTALITY AND GENERAL VITAL STATISTICS

From the figures published in a recent number of the WHO *Epidemiological and Vital Statistics Report*¹ it appears that in July and August 1953 deaths from tuberculosis reached the lowest level ever recorded. From preliminary data it appears that the lowest mortality from tuberculosis for the whole year occurred in the Netherlands with 9.2 deaths per 100 000 population. Over the same period Denmark had 9.6 deaths per 100 000² but during the two months already mentioned that figure

dropped to 5.2—a new record. While these two countries were the only ones to reach quite such impressively low figures there was remarkable general progress over the situation in 1950 in all the countries covered by this study.

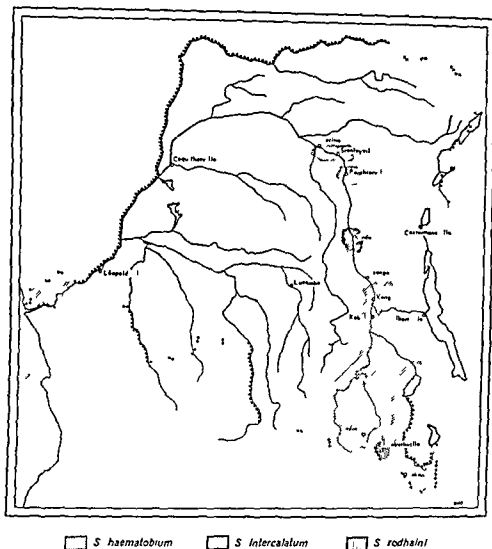
However these 25 countries from five continents are the only ones able to furnish valid and comparable health statistics. In countries which are still unable to do so the situation may well be far from satisfactory. In fact even in some of the countries studied the tuberculosis mortality rates were as high as 150 per 100 000 in some months.

One table shows the mortality from tuberculosis since the beginning of the century in

¹ *Epidem. vital Statist. Rep.* 1954 7 171

² The revised official rate received since publication of this study shows that the tuberculosis mortality from 1952 causes in fact fell to the record level of 8.8 per 100 000 (7.8 per 100 000 for pulmonary tuberculosis).

FIG 2 DISTRIBUTION OF *S. HAEMATOBIMUM*, *S. INTERCALATUM*,
AND *S. RODHAINI* IN THE BELGIAN CONGO



similar reports on other areas in forthcoming numbers

The study opens with a classification of the vector molluscs based on that of Bequaert & Schwetz followed by two detailed lists of their geographical distribution, the first done according to the work of earlier investigators and the second based on the molluscs found by the present authors

Separate sections deal with the various forms of bilharziasis in the Belgian Congo—intestinal from *Schistosoma mansoni* and

S. intercalatum and urinary from *S. haematobium*. For each of these, the authors give a brief historical outline, list the vectors, and describe in considerable detail the different foci.

Intestinal bilharziasis caused by *S. mansoni* is endemic in a large part of the Belgian Congo but the two most important foci are Ituri Uele and Katanga Kasai (see fig 1). The local population is able to withstand the effects of the disease fairly well, and often presents few or no symptoms. When symp

Although not a major public health problem, and of relatively little interest to—indeed often unrecognized by—the general practitioner this chronic disease is particularly distressing in its effects the primary site is genital with secondary manifestations in the inguinal anal and oral regions destructive granulomatous ulcers form and spread and in its advanced stages the disease is incurable. Almost everywhere in the world provision has been made for patients in the final stages of cancer or leprosy but no special institutions exist to receive the victims of donovanosis who become derelicts of society and not infrequently commit suicide in despair. Since it is however an affliction invariably associated with poverty lack of hygiene and debased sexual standards an organized public health campaign should be successful

in eradicating the reservoirs of infection and patients whose condition is diagnosed sufficiently early for treatment with antibiotics to be effective may hope for complete cure.

This publication reviewing the observations of all previous workers in the field, and illustrated by 38 photographs is the first comprehensive monograph on donovanosis. It is one of a WHO series of such studies each dealing with a specific disease and with measures for its control. Earlier studies published in this series are devoted to influenza² and plague³ and monographs on poliomyelitis and cholera are now in preparation.

World Health Organization (1954) *Influenza: a review of current research*, Geneva (World Health Organization Monograph Series, N 20) 223 pages price 17/6, \$3.50 or Sw f 10.

P. Huxley R. (1954) *Plague*, Geneva (World Health Organization Monograph Series, N 22), 693 pages price 23/3s, \$10.00 or Sw f 40.

Notes and News

Fourteenth Session of the Executive Board

The fourteenth session of the Executive Board was held on 26-27 May 1954 shortly after the closing of the Seventh World Health Assembly.

Dr H. Hyde, Chief of the Division of International Health in the Public Health Service of the Department of Health, Education, and Welfare of the USA, was elected Chairman. Dr O. Andersen, Professor of Paediatrics at the University of Copenhagen and Dr M. J. Ferreira, Professor of Hygiene at the Medical School of the State of Rio de Janeiro, were elected Vice-Chairmen and Dr R. Pharaon, Ambassador of Saudi Arabia to France and Dr H. B. Turbott, Deputy Director-General, New Zealand Department of Health, were elected rapporteurs. The other members were: Dr S. Anwar (Indonesia), Dr B. M. Clark (Union of South Africa), Professor H. M. Jettmar (Austria), Dr R. Lora Cortés (Costa Rica), Dr Melville Mackenzie (England), Dr U. Maung U (Burma), Dr P. E. Moore (Canada), Dr Ryu Ozawa (Japan), Professor J. Parrot (France), Dr P. Raffo-Sviri (Chile), Professor J. S. Saleh (Iran), Dr P. Vollenweider (Switzerland), Dr S. Al Wahbi (Iraq).

The Board is composed of 18 persons designated by as many Member States. It exercises, on behalf of the World Health Assembly, the powers delegated to it by that body and no member represents the interest of one particular State.

The Board examined the co-ordinating role of WHO in poliomyelitis research and requested that a full report be made to it on new developments in this field at its next session in January 1955.

The Health Assembly had called the attention of Member States to the importance of environmental sanitation programmes and the Executive Board decided that WHO work on this subject should be concentrated on two main points, namely water supply and waste disposal.

The Board also examined and approved for publication the reports of a number of expert committees: the first report of the Expert Committee on Onchocerciasis, the first report of the Expert Committee on Health Education of the Public, the third report of the Expert Committee on Nursing, and the sixth report of the Expert Committee on Tuberculosis (dealing with BCG vaccination). On the latter point the Board noted that no effort should be spared to obtain scientific information on the effect of BCG vaccination in the prevention of leprosy.

The Executive Board approved the selection of Copenhagen as the site of the WHO Regional Office for Europe. A few days previously the Regional Committee had in a special session chosen Copenhagen from among several other cities proposed: Nice, Frankfurt, The Hague, Geneva, Montreux, Vienna, and Florence. The decision will not take effect however until after consultation with the United Nations.

28 countries, it gives a striking illustration of the decrease in deaths from tuberculosis, amounting in some cases to drops of 80% and even 90% during this period. However, while tuberculosis is no longer the scourge it once was in some parts of the world, it retains its pre-eminence as the worst public health problem to be faced by health administrations in the majority of countries.

The subsequent number of the *Epidemiological and Vital Statistics Report*² gives natality and general mortality statistics for nearly 60 countries or territories for the years 1951-4, generally in comparison with the mean figures for the period 1928-39. Other tables give recent figures for the cases of and deaths from typhoid and paratyphoid fevers, syphilis, gonorrhoea and cerebrospinal meningitis.

² *Epidemiological and Vital Statistics Report* 1954 7 203

CASES OF AND DEATHS FROM NOTIFIABLE DISEASES

Part II of the work *Annual Epidemiological and Vital Statistics, 1950*, has recently been published by WHO¹ and contains data relating to 35 communicable diseases, ranging from plague and cholera to influenza and including malaria, the rickettsial diseases, communicable diseases of childhood, syphilis and poliomyelitis. For most of the diseases listed, the numbers of cases or deaths have been given by month or four week period, but for diseases with no marked seasonal

fluctuation, only the annual totals are included.

The figures given in this volume are revised data, taken partly from official publications and partly from replies to requests for information sent by WHO to health authorities throughout the world. In a certain number of countries, the figures for deaths are derived from analyses of death certificates received by registration offices.

At the end of the volume a table is given of the modifications to be made to the list of notifiable diseases which appeared in the preceding volume (covering the period 1947-9) in order to obtain the situation in most countries at the end of 1950.

¹ World Health Organization (1954) *Annual epidemiological and vital statistics. Part II. Cases of and deaths from notifiable diseases*. Geneva. 163 pages. Price 17/6 \$2.50 or Sw fr 10.— Bilingual edition in English and French.

DONOVANOSIS

Donovanosis is a disease of venereal origin which has been frequently confused with lymphogranuloma venereum or lymphogranuloma inguinale, and has been described under many different names. A systematic study¹ of its history, distribution, etiology,

clinical features, and treatment has now been carried out by workers at the General Hospital and the Medical College of Madras where, nearly 50 years ago, as professor and physician, Major Charles Donovan discovered and described the intracellular bodies which are present in the lesions associated with the infection, and to which he gave his name.

¹ Rajam R. V. & Rangiah P. N. (1954) *Donovanosis*. Geneva. World Health Organization Monograph Series No. 24. 72 pages. Price 10/— \$1.50 Sw fr 6. French edition in preparation.

Prosthetics Conference to Meet in Copenhagen

A conference of a consultant group on prosthetics convened by WHO is to meet in Copenhagen from 23 to 28 August 1954. The agenda will include consideration of the causes and prevention of amputation; its incidence; basic principles for the rehabilitation of the amputee; requirements for the formation and development of a limb-fitting service; the training of personnel; the basic principles of a simplified artificial limb; and a review of existing types of prosthetic appliances; the administration of prosthetic services; and the principal problems for international consideration and action.

Revision of International Statistical Classification

An international conference for the revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death is planned for February 1955. In order to prepare for this, the WHO Advisory Group on Classification of Diseases met in February 1954 to review the experience gained in the use of the present classification. National comments and suggestions on this group's report will be considered by the Expert Committee on Health Statistics in September 1954. The committee will also consider the structure and principles of morbidity and mortality lists suitable for areas with few or no qualified medical personnel and where the International Statistical Classification is consequently difficult to apply. It is also expected that the revision conference in 1955 will provide participants with an opportunity to discuss various subjects of health statistics related to the revision and which are of national as well as international importance.

Institute of Inter American Affairs in its 13th Year

Last February the Institute of Inter American Affairs (IIAA) completed the twelfth year of its existence. During its life it has developed co-operative health programmes with 19 Latin American States. In the course of these years the IIAA, with the collaboration of the Pan American Sanitary Bureau, WHO and voluntary agencies such as the Rockefeller and Kellogg Foundations, has stimulated a great awakening in public health throughout the Americas. One of its most important and most successful undertakings has been in the field of environmental sanitation, accounting for the greatest number of field projects carried out by the "Servicios" jointly with the responsible ministries.

Begun during the war, the first efforts were to improve environmental conditions for workers

engaged in the production of strategic materials. Most important was the control of malaria and of gastro-intestinal diseases. After the war emphasis was laid on technical assistance and financial support for the continuous development of better health and sanitation. Safe water-supplies and adequate sewerage systems were considered essential and nearly 500 sanitation projects were executed during the first ten years of operation, covering water-supply and sewage-disposal facilities, markets and slaughter houses. The training of nationals was given high priority. Besides in-service training, over 250 Latin American engineers were sent to the USA. On their return they organized new sanitation departments, strengthened existing ones and provided vigorous leadership in the sanitation field.

Fourth Seminar of European Sanitary Engineers

The fourth seminar of European Sanitary Engineers was held from 22 to 28 April 1954 at Opatija, Yugoslavia, under the joint sponsorship of the WHO Regional Office for Europe, the Rockefeller Foundation and the Government of Yugoslavia. European engineers and public health administrators from 21 countries met and discussed two important problems of topical interest: river pollution and water disinfection.

The discussions and the papers presented on the first topic dealt with such questions as water pollution in Europe, the philosophy and practice of water pollution control and the health problems involved. On the second topic the discussions were mainly devoted to the physico-chemical aspects of the water chlorination process, the biological action of chlorine and its compounds in water disinfection, and the methods and practices of chlorination.

Considerable experience and understanding was gained by a lively exchange of views on the different approaches adopted in different European and American countries in tackling the various problems met there. It is expected that this seminar will prove useful in contributing to a greater dissemination of technical knowledge and in arousing increased interest in these problems among European health authorities.

Dr C. L. Gonzalez Appointed Assistant Director of PASB

Dr Carlos Luis Gonzalez, Chief of the Division of Public Health of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, has been appointed to the post of Assistant Director PASB.

Finally, the Board decided that the Eighth World Health Assembly should start on 10 May 1955 in Mexico City

Success of an Antityphus Campaign in Afghanistan

According to final reports received by the WHO Regional Office for South East Asia the antityphus campaign carried out in and around Kabul the capital of Afghanistan was fully successful In a country where only a few years ago a series of devastating epidemics of louse borne typhus took a toll of thousands in dead or seriously ill no cases were recorded this year in the entire Kabul area

These spectacular results are due to the large scale application by the national health services of DDT dusting procedures first demonstrated in 1950 51 by experts made available by the World Health Organization Despite heavy snows and the severest winter experienced in Kabul for more than 50 years nearly 245 000 persons were covered in this campaign In a total of 19 275 homes more than 2.5 million pieces of clothing beds and bedding were dusted, as were 302 mosques 29 public baths and 1 294 horse drawn hacks (tongas)

The work was carried out exclusively by teams of Afghan health workers under the personal supervision of Dr A. R. Hakim Director General of Health Services in the Ministry of Public Health WHO provided only a limited amount of technical advice while UNICEF contributed substantial quantities of DDT powder and various items of equipment to supplement the local resources

European Regional Conference on School Health Services

The WHO Regional Office for Europe in collaboration with the French Government and with the participation of UNESCO organized a conference on school health services in Grenoble from 14 to 19 June 1954 in which school doctors and nurses from 22 countries in the European Region took part

All these countries are active in the field of school health but with considerable variations in the level of attainment and in organizational structure Thus they may be roughly divided into two categories those countries where practically all children go to school where the health services—at least at the primary level—reach almost all the children and where medical work is largely preventive and those where school attendance is in the process of being extended where widespread social diseases still exist among the school population and where the medical

work must be both curative and preventive. This varied participation gave the conference a very wide scope and means that its conclusions are of value beyond the better developed group of nations in Europe proper

On the subject of school medical examinations it was unanimously agreed that only one child should be examined at a time and that the examination, no matter how short, should be the occasion of warm personal contact between doctor and child and should contribute to the child's health education

Stress was also laid on the importance of co-ordination between the school health services and, for instance maternal and child health services and those concerned with higher age groups In addition good understanding and co-operation between children doctors parents and teachers is essential if full value is to be derived from the facilities and services provided for the children's health and for improved health education

Other subjects discussed included fatigue induced by overwork or by setting too high a standard sex education the teaching of children with deficient sight or hearing the medical examination of school staff to prevent the transmission of diseases to children dental services the training of school medical officers and the publication of textbooks and periodicals on school health The question of holding a second conference to consider outstanding items such as mental health in schools was also discussed.

Seminar on Dental Health Held in New Zealand

At a dental health seminar organized jointly by the New Zealand Government and WHO 38 participants from 21 countries of the Western Pacific and South East Asia Regions and including three persons from the Eastern Mediterranean Region met in Wellington New Zealand from 4 to 21 May 1954 to exchange views on dental health questions in those Regions

The subjects discussed were the needs in the Regions the methods whereby dental health programmes can be made an effective part of public health services and the selection and training of dental health personnel Particular emphasis in the discussions was put on the modern concept of dental caries including the effect of diet prevention by oral hygiene the topical application and ingestion of fluorides fluoridation of water supplies and the cause and prevention of periodontal diseases

This seminar was the first on this subject to be sponsored by WHO and was a part of the Organization's assistance in the education and training of health personnel—one of its most important activities

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Born in 1916 in the city of Independencia Tachira State Venezuela Dr Gonzalez has had an outstanding record of accomplishment both in the field of public health in his own country and in international public health work. He has represented his country at most of the World Health Assemblies and at the meetings of the Directing Council of the Pan American Sanitary Organization. He was elected Chairman of the Council at its sixth session in 1952 in Havana where he was also Venezuelan delegate to the First Inter American Congress of Public Health.

He has been a Member of the WHO Panel of Experts on Public Health Administration and was appointed by the Government of Venezuela to serve as a member of the Executive Board of WHO from 1950 to 1952.

He received his university degree at the Universidad Central Caracas in 1938 and began work in the

Venezuelan Ministry of Health a year before his graduation as laboratory technician in the Ministry's Cancer Institute. After graduation he was appointed director of the laboratory of the Mental Hospital in Caracas. From 1939 to 1946 he was chief medical officer in various health units in Venezuela gaining valuable field experience. In 1946 he received a fellowship from the Rockefeller Foundation, extended for a second year by the Venezuelan Government to study at the Johns Hopkins University School of Hygiene and Public Health in Baltimore Md USA where he received the degrees of M P H in 1947 and D P H in 1948.

In 1948 he was appointed director of training courses for public health medical officers in Venezuela, and in August 1949 he became Director of Public Health a position he held until his appointment to the Bureau staff in 1953.

Obituary

SOTIRIOS B BRISKAS

We have learnt with regret of the accidental death of Professor Sotirios B Briskas (Greece) which occurred shortly after the Seventh World Health Assembly at which he had represented his country.

Professor Briskas was born in 1905 in the Peloponnesus and received his medical diploma in 1927 and his D Sc in 1937. He was first deputy physician at the Clinique Médicale des Enfants in Paris and in 1939 was appointed to the professorship of paediatrics at the Faculty of Medicine in Paris a position he retained until his death. He was also consultant physician at the Hôpital des Enfants

Malades in Paris and deputy physician at the Medical Biochemistry Laboratory there.

His considerable scientific work was largely concerned with the physiology and pathology of children covering copper metabolism, primary tubercular infection and a variety of other subjects. His publications which number at least 235 and his contributions to various scientific works were rewarded by a number of prizes from the Academy of Medicine and the Academy of Science of Paris.

He had also taken part in a number of international conferences among them being several General Assemblies of the United Nations. He had participated actively in the discussions at the First, Second, Fourth and Seventh World Health Assemblies (see below) and he had served as a member of the Executive Board of WHO at its eighth session.

Points from Speeches at the Seventh World Health Assembly

Professor S Briskas, Greece

In a few weeks a year will have elapsed since earthquakes of an unprecedented violence shook the islands of the Ionian Sea. More than 1 000 dead and wounded thousands of people homeless entire towns and villages levelled to the ground—as though in the terms of the report by the WHO representative they had been subjected to combined large scale air and naval bombardments—this was the tragic toll of the disaster. And to make matters still worse the

initial earthquake that brought such ruin in its train was followed by secondary tremors which were unforeseeable and which created in an already sorely tried population a state of permanent anxiety with psychological repercussions which prolonged and aggravated the effects of the physical suffering and material damage. If we could only believe that this catastrophe was a thing of the past! Unfortunately this is not the case since as you have heard there have been new and serious tremors much more

recently affecting even the mainland of Greece and bringing further tragedy and destruction in their wake

If I refer to these catastrophes before the Assembly it is because they provide a particularly striking example of the role WHO can play in international assistance, particularly when a calamity strikes one of its Members. This aspect of the Organization's beneficent work is very little known because happily the occasions for it arise only exceptionally. The Greek Government from the outset took every possible step for the assistance of the earthquake victims by distributing food and clothing and providing medical assistance several thousand of the island inhabitants were evacuated to the mainland. However although the Government showed its ability to cope with the situation, that in no way lessened its appreciation of the assistance given by WHO

On behalf of the Greek Government I have the honour to offer to the World Health Organization the heartfelt gratitude of my entire country which has been deeply affected by the Ionian Islands catastrophe. At a moment when international relations present so many difficulties when they are strained by so much mutual misunderstanding and even, alas, hostility it is particularly comforting to find that men can be entirely single-minded when they unite to relieve the suffering of their fellows. Over and above the gratitude of my country I would like to lay the example of this supreme lesson before you

Sir Arcot Mudaliar India

Here in this very building a momentous session is now taking place which has attracted global attention and to whose conclusions millions of hearts are looking with hope not unmingled with anxiety the future not only of Asia but of the whole world of humanity hangs in the balance. A writer in a periodical a couple of years ago referred to the tragedy of the world situation in the first half of this century. He stated that within the first half century more wars were fought and more lives were lost than had been the case in the preceding 800 years of human existence. There had been more human misery more cruelty more mass assassination, more ravages against humanity more loss of the finer trends of human thought and human feeling than had ever been exhibited in the unfortunate record of humanity since the birth of civilization and he added that today what we have to fear is not the ignorant not the illiterate not the savage but the highly educated and highly competent technical expert. I wish this prediction were not true but unfortunately reason rebels against accepting it as untrue. A sad commentary indeed on all our progress in education if

it be true. But hope springs eternal in the human breast" and we of the World Health Organization who are wedded to the removal of suffering and the promotion of health, we who are dedicated to the service of humanity of the injured, the wounded, the maimed, to whatever class they belong and whatever ideology they may be supposed to cherish we of the World Health Organization will pray fervently that all tensions may ease that the world may once more settle down to forge ahead with armaments of peace and that the real fight will be against poverty disease and all its manifold manifestations

Dr S Btsh Israel

Perhaps the most striking is the progress made in our country in the control of tuberculosis. Through extensive hospitalization, BCG vaccination and country wide case finding we have reached a position where we are able to hospitalize almost immediately every case discovered. Morbidity from tuberculosis during 1953 fell to 1.8 per 1 000 of the population and mortality steadily decreased from 19.2 per 100 000 of the population in 1947 to 10.4 per 100 000 of the population in 1953. No less striking is the position with regard to malaria which has been practically wiped out with the exception of a small stretch of land on the north-eastern border of the country

In maternal and child health great progress was made. Infant mortality in 1953 reached the low level of 35 per 1 000 live births as compared with 52 in 1949. Control of venereal diseases by case finding activities and free treatment was also gratifying. The number of cases of venereal diseases in the country is negligible and only 11 cases of congenital lues were recorded in 1953

In the field of hospitalization great strides have also been made. There are at present 32 general beds per 1 000 of the population and a number of additional hospitals are under construction

Dr D El Chatti Syria

The grant of fellowships compared with the sending of teams of experts is an immensely more effective durable and broader contribution to the development of health services. Those returning after study on fellowships share the benefit of education received outside and form a reservoir to be drawn on for the maintenance of a balance between the extent or number of projects and the number of persons qualified to put them into operation

Because social contact is such a large element in public health work, we further suggest that another

goal for the grant of fellowships be the expansion of the fund of native experts who already have a facile understanding of the background and ways of their people leading to smoother relations efficiency and accurate judgment in their work

We have no doubt as to the value of international teams to which the results of their fine work bear the best witness. Although the team members and advisers are qualified generally for their work they have rarely a deep understanding of the all important social milieu. Nor have they the time during their hurried visits to study or evaluate the phenomena to which they are exposed. Therefore fellowships of an international character in particular are worthy of high priority among budget items.

Sir John Charles, United Kingdom

There are some no doubt who regard the problems of modern Britain or even the Britain of 100 years ago as remote and incapable of comparison with their own and to such I would say we have had and still have not dissimilar problems and have taken steps to solve them. We too have met the great plagues at one time and another and have conquered them—leprosy malaria even the plague typhus typhoid smallpox and cholera. We are still battling with others. Sometimes the remedy has been and is a purely medical one more often a combination of medical knowledge legislative activity and administrative capacity involving many persons many crafts many types of experience. But it has always taken time and perseverance. For short term planning and the emergency a certain degree of feverishness can be allowed for such long term planning as WHO is now embarking upon patience and constant unremitting endeavour are the watchwords. Other men have laboured and we are entered into the fruits of their labours. Other men in their turn will harvest our fruits. We are like the Romans of old who placed acorns in their pockets and planted them here and there not for their own immediate benefit but that their grandchildren should find shade and comfort under the leaves of the oak trees of the future.

Dr A Stampar, Yugoslavia

this Assembly marks the end of the period of eight years of our work since the establishment of our Organization. In an attempt to summarize that period I propose to divide it into three different and distinct phases.

The *Interim* Commission which operated for nearly two years might be regarded as our romantic period inspired by the favourable developments at the International Health Conference held in New York

in June and July 1946. On that occasion delegates of what could then be considered a large number of countries including even those which were not Members of the United Nations gathered there thus manifesting our endeavour to make our organization universal. Despite the relatively small means we had at our disposal our programmes which were of limited number were carried on with faith in the further progress and expansion of the scope of our activities. However that romantic period came to an end already in 1948 when favourable developments towards making our organization a *univers* one were stopped owing to the position taken by some countries.

Then came what we may call the realistic period of our activities. We gradually began to extend our activities in many ways and many territories both on our own initiative and at the request of some Members of the Organization. Though our resources were still limited as compared with the programme we had in view nevertheless the Organization achieved notable worthy progress in many fields. The decision of the United Nations to establish the Programme of Technical Assistance for underdeveloped countries gave rise to new hopes for it promised a notable expansion of our activities as well as possibilities for their realization. It encouraged our optimism associated with the hope that Technical Assistance would become a permanent institution of the United Nations with resources that would not be liable to reduction. Meanwhile the cuts in the Technical Assistance Programme which took place primarily owing to delays in the payment of contributions initiated a critical period in our development. It is evident that the cuts in Technical Assistance funds have assumed such proportions as to reduce a great deal of activities some of which have been carried on thanks only to our utmost efforts.

On account of the Technical Assistance Programme many of our activities were intensified and promises were given to different countries as to future action. All that encouraged a justified hope of further achievements aroused interest for our activities and imposed new sacrifices on behalf of receiving countries both as to their contributions and the necessary expenditures to maintain expert teams sent to them. At the beginning some countries greatly benefited from the Technical Assistance Programme. Very soon however that aid was subject to curtailment which resulted in the postponement and deletion of the programmes which had been planned. In that way I am afraid the prestige of our organization has been very much affected and its recovery will take a long time. In some cases it will be hardly possible. It must be borne in mind that some Members of the Organization might even start to develop

a feeling of distrust towards the Organization despite cases where results of lasting value have been achieved as in the fields of prevention of communicable diseases, medical education, sanitary engineering, demonstration centres, expert committees etc. although some of these examples of constructive work cannot be attributed exclusively to our organization. Undoubtedly many fellowship awards as well as efforts towards the strengthening of national

health administrations, have always been very much appreciated. An encouraging sign however is the endeavour of certain Members of the United Nations in the United Nations General Assembly and in the Economic and Social Council to establish Technical Assistance funds on a permanent basis which would not be liable to fluctuations and frequent and sudden changes so to ensure uninterrupted activities in the field of world health.

Views on WHO

Director General's Annual Report

The review of the Annual Report of the Director General, 1953 appearing in the 23 April 1954 issue of *The Medical Officer* ends with the following comment:

No one who reads this report and who believes that health is indivisible can feel that the United Kingdom's contribution of something over a third of a million pounds is excessive or ill spent. Dr Candau, in an address given in London on World Health Day (7 April) forecast an increase in the British contribution by some £117 000—a half penny a head—which we trust will be ungrudgingly given.

The Work of WHO

Under the title 'The promotion of world health' the *British Medical Journal* of 17 April 1954 devotes a leading article to the report for 1953 of the Director General.

World Health Day, April 7, was celebrated in London at a meeting addressed by Dr M. G. Candau, Director-General of the World Health Organization, and by Mr Walter Elliot M.P., a former Minister of Health. Dr Candau's visit to London coincided with the publication of his annual report.

The report mentions that there were about 350 WHO projects in 74 countries last year. The greatest number of these were proceeding in south-east Asia and the next largest groups were in Europe, the Americas and the Eastern Mediterranean, with 60 or 70 enterprises in each region. WHO's activities in

Africa were relatively few in 1953 but they extended from public health education in Liberia to the supply of medical school equipment in Kenya and malaria control on the Congo.

As these projects are developed they seem to have a sharper definition than in earlier years. WHO is not a rich uncle distributing largesse among impoverished nephews. Its purpose is to stimulate regional and local effort so that eventually there may be in every country and territory a band of trained and competent workers to man the health services. In the distant future when that is accomplished WHO will have a different role to play. Meanwhile as Dr Candau rather sadly remarked at the World Health Day meeting in London, the funds available from technical assistance sources are liable to fluctuate. In order that the work of the Organization will not suffer, the World Health Assembly is to be asked to increase the effective working budget from the previous year's figure of 8 500 000 dollars to 10 300 000 dollars. This amount, Dr Candau said, was needed to enable them to carry out, without interruption, their planned health activities in 117 countries and territories in 1955. He added that the United Kingdom was the second largest contributor after the United States to the funds of WHO at the present moment. The United Kingdom contribution to WHO amounted to 11½d per head of the population per year. If the budget was increased by the desired amount the cost to every person in the United Kingdom would be one halfpenny a year more. It is unfortunate that a number of countries are in arrears with their contributions and that there is a phalanx of inactive members behind the Iron Curtain, but even with these disabilities WHO achieved much to be proud of in 1953 and will undoubtedly continue to play a central part in the work of improving environmental conditions throughout the world.

WORLD HEALTH ORGANIZATION MONOGRAPH SERIES

Two recently published numbers

No 19

ADVANCES IN THE CONTROL OF ZOONoses

Bovine Tuberculosis — Brucellosis — Leptospirosis
Q Fever — Rabies

WHO/FAO Seminar on Zoonoses Vienna November 1952

Zoonoses is a relatively new term designating those diseases which are naturally transmitted between vertebrate animals and man. Their control is one of the major fields of veterinary public health. In November 1952 FAO and WHO invited to a seminar in Vienna about 50 medical and veterinary specialists from 20 countries to consider the problems raised by the five zoonoses which are most often met with in Europe. The papers read and the discussions which followed are recorded in this jointly published monograph. Veterinarians, physicians and public health officials should find here much valuable technical information and fresh ideas for a joint attack on their common problems.

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No 20

INFLUENZA

A Review of Current Research

Influenza recognizes no man-made boundaries—and is consequently a problem for health workers all over the world. A number of distinguished authorities from six different countries were invited to review various aspects of this complex subject, each from the point of view of his personal interest and experience. By bringing together in one volume these nine papers, well illustrated, indexed and complemented by a classified bibliography, WHO hopes to provide influenza workers with the latest information to show them where further detail can be found and to stimulate those engaged in routine work to step out into the field of research.

English edition 1954 224 pages 21 plates 16 figures 12 tables bibliography index

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CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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LIVING VIRUS VACCINE IN RABIES CONTROL

A campaign of mass vaccination of dogs carried out in Israel with the aid of WHO has shown that live antirabies vaccine—still in an experimental stage a few years ago—may become a decisive weapon in rabies control.

The "Flury" strain of the rabies virus which is the principal strain used in preparing the vaccine was isolated from central nervous system tissue of a girl named Flury who died of untreated rabies in 1939. This virus maintained through passages on the chick brain has since 1945 been adapted to the developing chick embryo. Continued egg passage has resulted in a lessened pathogenicity for experimental animals without apparent loss of antigenicity. Vaccine at the 40th to 50th egg passage level is now used for the immunization of dogs for the vaccination of cattle particularly of herds in South America which are threatened by the bites of rabid vampire bats vaccine at the 170th to 180th passage is used. The

"Kelev" strain at the 60th to 70th passage is also employed as vaccine for dogs.

Laboratory studies and limited field trials since 1950 had shown the harmlessness when injected intramuscularly and the strong immunizing power of Flury strain vaccine for dogs. This vaccine seemed to confer an immunity of three years or more displaying its superiority in this respect over inactivated nervous tissue vaccines particularly phenolized vaccines. However the efficacy of the vaccine had not yet been proven under field conditions on a nation wide scale. WHO therefore decided to sponsor an antirabies pilot project in an area of limited size where rabies was enzootic. In this campaign compulsory vaccination of dogs with living modified virus vaccine prepared in chicken

embryos was to complement the usual control measures—registration and supervision of dogs elimination of stray dogs wildlife control, etc.

The Republic of Israel was chosen as the demonstration area. Rabies is enzootic in Israel from 1932 to 1950 the annual number of cases of rabies in animals varied between 50 and 333. In 1949 there were 138 laboratory-confirmed cases (80 in dogs 27 in ruminants 20 in jackals 7 in horses and 4 in cats) and rabies had become a serious health problem. Another reason for selecting Israel for the demonstration was that the veterinary and public health services of the country were well organized adequately staffed and able to carry out the control measures which were to be under the technical guidance of WHO.¹

Two types of living modified virus vaccine of either the Flury or the Kelev strain, prepared in the chicken embryo (see fig. 1) were used in this campaign. The first was a Flury strain vaccine which was produced and freeze-dried in New York and shipped to Israel by air in cartons containing dry ice. Upon arrival in Israel, the vaccine was placed under refrigeration ($+4^{\circ}$ to $+8^{\circ}\text{C}$). It was subsequently taken in thermos flasks packed in ice to the field of operations and used within one to two hours after restoration with diluent. The vaccine when restored with 3 ml of distilled water contained a $33\frac{1}{3}\%$ suspension of infected whole chicken embryo. Approximately 26 000 doses of this vaccine were supplied to the health services of Israel. The second type of vaccine consisted of 2 000 doses of Flury strain and

An article by M. M. Kaplan, Y. Goor & E. S. Tierkel, published in *Bull. Wld Hlth Org.* 1954, 10, 743 describes the various phases and the results of this campaign.

SCHEDULE OF MEETINGS

2 11 September	Study Group on Children in Hospitals, Stockholm
6-13 September	Regional Committee for the Western Pacific, fifth session Manila
13 16 September	Regional Committee for Europe fourth session Opatija
13 18 September	Expert Committee on Health Statistics fourth session Geneva
20 25 September	Regional Committee for Africa fourth session Léopoldville
20-25 September	Meeting of Consultant Group on Dental Health Geneva
21 25 September	Regional Committee for South East Asia seventh session, New Delhi
27 30 September	Expert Committee on the International Pharmacopoeia Subcommittee on Non Proprietary Names, sixth session Geneva
27 September 2 October	Joint Meeting of the Expert Committees on Mental Health and on Alcohol, Geneva
1 6 October	Conference on African Onchocerciasis, Léopoldville
4 6 October	PASO Executive Committee twenty third meeting Santiago
7 22 October	Regional Committee for the Americas sixth session, Santiago PASO Fourteenth Pan American Sanitary Conference Santiago
11 16 October	Expert Committee on Drugs Liable to Produce Addiction fifth session Geneva
17 30 October	Public Health Nurses Seminar Istanbul
18 23 October	Expert Committee on Biological Standardization, eighth session, Geneva
20 October 1 November	Inter regional Meeting for the Co-ordination of Research on Sylvatic Plague to be attended by Governments of Iran, Iraq Syria and Turkey Teheran
22 October	PASO Executive Committee twenty fourth meeting, Santiago
25 October 10 November	Committee on International Quarantine, second session Geneva
26 October 2 November	Joint FAO/WHO Expert Committee on Nutrition, fourth session Geneva

The mention of manufacturers products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature which are not mentioned

FIG 2 MONTHLY INCIDENCE OF RABIES IN ANIMALS BEFORE AND AFTER MASS VACCINATION OF DOGS IN ISRAEL MAY 1948 - JUNE 1953

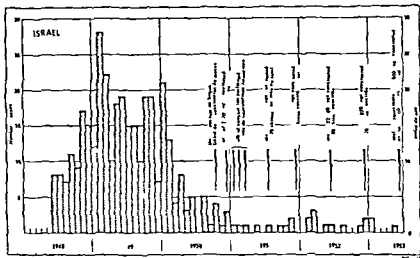


FIG 3 INCIDENCE OF CANINE RABIES IN RELATION TO DOGS VACCINATED AND TO DOGS DESTROYED IN MALAYA DURING THE PERIOD MAY 1946 - JULY 1953

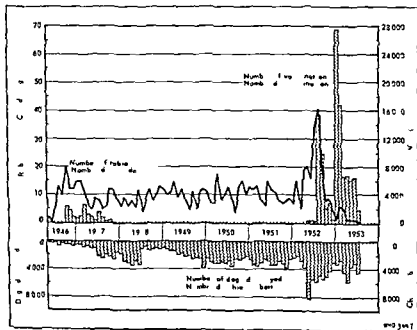
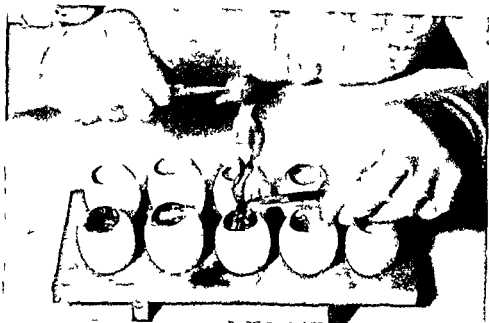


FIG 1 HARVESTING INFECTED EMBRYOS FROM WHICH VACCINE IS PREPARED



By courtesy of Dr F Perez-Gallardo Madrid

2 000 doses of Kelev strain prepared by the Virus Laboratory of the State Veterinary Service, Haifa

Municipal and State veterinarians and their assistants carried out the vaccination and registration of dogs which was preceded by an intensive publicity campaign. The dogs received 3 ml of the vaccine, injected intramuscularly into the posterior fleshy muscles of the thigh. At the beginning of 1952 it was estimated that almost 90% of all dogs of 6 months or over—more than 15 000 dogs—had been vaccinated. Other control measures were also applied. In towns stray dogs were destroyed in gas chambers; in rural areas they were shot. The carcasses of donkeys into which strychnine was introduced were used as bait in jackal reducing programmes. Quarantine stations for the detention and observation of rabies suspect dogs were established in five localities.

The results of the campaign were immediately apparent. While in 1950 the number of cases of rabies was 44—a figure which it

must be admitted indicated a natural recession of the disease in comparison with previous years—in 1951 it was 8, in 1952 10 and in 1953 3 (see fig 2). One of two cases of rabies which appeared among the vaccinated dogs may be considered as a vaccination failure.

The problem of rabid jackals which had been a concern to cattle owners also seemed practically to disappear. The explanation may be that the elimination of canine rabies removed an essential link in the rabies transmission cycle of jackals.

It is impossible to evaluate precisely the role that compulsory immunization of dogs with living virus vaccine may have played in the elimination of rabies as a public health problem in Israel. There are various reasons however for considering vaccination as the principal factor. Although numerous measures had been satisfactorily applied in the years preceding the campaign—e.g. registration of dogs, reporting of cases of rabies, laboratory diagnosis, elimination of stray

icular reference to factors that make for good or poor health and to consider how a knowledge of that subject [could] be applied in programmes of child welfare child health and education" Personality was defined as "the whole person each person being unique and the development of his interacting somatic psychological and sociological systems tending towards integration" The approach to the study of personality development in relation to mental health was a positive one it being considered that the most effective means of preventing mental illness [is] to improve mental health"

The formation of personality has its roots in the basic genetic endowment of the individual Since this basic endowment is different in each person reactions to the life experiences which subsequently mould the personality also differ

In infancy only the beginnings of personality exist for the baby as an individual makes minimal contact with the environment. The raw material is there but the process of fashioning a self is long and complex. Individual differences in personality traits are noticeable however within the first few weeks of life—some say within the first ten days. The processes by which personalities develop are the same for all, but the end results are unique and specific to the individual

The processes of personality development may be summarized under three headings: maturation adaptation and learning. The first, maturation "depends chiefly on the central nervous system sensory development and neuromuscular co ordination" Adaptive behaviour while being partly dependent on maturation requires "the ability to act purposefully and in relation to a goal to satisfy one's needs and to profit from past experiences" Learning which is perhaps the most important of the processes may be of several types

(1) contagion—the earliest type of learning, in which the infant feels the emotional state of the adult and reacts accordingly

(2) conditioning—in which the individual comes to associate a certain kind of situation with an appropriate response so that the reaction becomes automatic and habitual

(3) communication—a type of social learning which is direct and purposeful and may be either verbal or non verbal

(4) association of experiences

These processes "lead to a gradual awareness of the self as distinct from the environment and later development extends and enlarges the concept of self through the individual's private world" The private world of the individual is part of his effort to adapt his own needs and wishes to the internal geographical social and cultural environment in which he must function. It has as its core the image which the individual develops of himself and which he maintains by various mechanisms of adjustment. Sometimes this image conflicts with the self that would win social approval so the individual is at pains to conceal his true self to guard his private world. The way in which a person's private world is formed is fundamental to the development of his personality for the concept of self that results determines what he is and does how he feels towards others and to what he may aspire

Psycho-analytical theory has contributed much to knowledge concerning the formation of the child's private world the reasons for the defences which are built up and the mechanisms used in making the required social adaptations. It has been proved that even in the newborn child there are instincts directed not towards self preservation but towards finding an object that gives gratification and pleasure. The first such object is of course the mother so that the infant's primary "object relation" is with his mother. In Freudian terminology the instincts that are the vehicles for establishing object relations are known as the infantile sexual

animals and destruction of wildlife reservoirs of the disease—these measures had not sufficed to bring rabies under control. This objective was not attained until the mass vaccination of dogs was introduced.

Further evidence of the efficacy of vaccination of dogs is provided by reports from Malaya² where an active antirabies campaign was undertaken, also with WHO technical

guidance and collaboration. There compulsory vaccination of dogs particularly with Flury virus, succeeded in controlling the disease which enzootic since 1924 had become an alarming health problem in 1952 (see fig. 3).

See article by C. W. Wells in *B. U. Wild. Hlth. Org.* 1954
10 731

* * *

Since this article went to press information has been received from Israel of a recrudescence of rabies during the first half of 1954. Thirty three cases have been reported in animals (30 dogs, 2 cows, and 1 horse). One human fatality also occurred.

It is significant that none of the cases in dogs were in vaccinated animals. Because of financial difficulties the control of stray dogs was relaxed in the latter part of 1953 and the first half of 1954. This explains the increase in the number of cases and emphasizes the necessity of stray dog control along with vaccination procedures. Steps are being taken by the Israeli Government to resume stray dog control. Of interest is the fact that most of the cases occurred in puppies under six months of age in one district—the suburbs of Haifa. In accordance with recent experimental results, puppies are now being vaccinated at two to three months of age instead of waiting until they are six months old as was done during the early part of the campaign in Israel.

MENTAL HEALTH IN CHILDHOOD

Western Pacific Seminar

WHO's Western Pacific Region offers unusual opportunities for the study of health problems against a background of great diversity of peoples and cultures. Such an opportunity was afforded in the summer of 1953 by a seminar on mental health in childhood, sponsored by the Government of Australia and WHO and held in Sydney. Participants in this two week seminar represented at least seven different professional disciplines and twelve countries or territories¹ which gave a varied picture of stages of economic and social development and of

ways of child rearing. Though emphasis was on Western knowledge and practice it was possible to compare traditions and customs of East and West and their effects on the mental health of children.

The following account which touches on only a few of the subjects covered by the seminar is drawn from a report prepared and issued by the Institute of Child Health of the University of Sydney, the agency responsible for the organization of the seminar.

The child as an individual

The purpose of the seminar as stated in an orientation lecture was to examine the early development of personality with par-

¹ Australia, China, Hong Kong, Indonesia (South East Asia Region), Japan, Malaya, New Guinea, New Zealand, Philippines, Sarawak, Singapore and Thailand (South East Asia Region).

one represented by the claim of each family member for individual expression and the other an increasingly organized dehumanizing socio-economic system within the community". The relevance of such changes to the mental health of children is evident the insecurity felt by parents as a result of these influences is bound to have a profound effect on their children. Although there is a need for simplification of emotional relations and controls modern community life tends to complicate rather than to simplify the material environment of the young child. It is the responsibility of the parents to try to create some stability based on consistency

of action with regard to guidance and discipline

A note of warning was sounded by the seminar participants in attempting to heed the advice of "experts" on child care mothers may be prevented from enjoying their children and the development of a satisfying relationship between mother and child—the most essential element in the mental health of the child—may thereby be impeded. All the propaganda directed at mothers may actually create rather than allay anxiety about the perils and difficulties of child bearing and child rearing and may even promote the mental ill health of children

INTERNATIONAL SANITARY REGULATIONS

Two Years' Experience

The adoption by the Fourth World Health Assembly of the International Sanitary Regulations was hailed by Dr L. A. Scheele, Surgeon General of the US Public Health Service and President of the Assembly as "the greatest step forward ever recorded in this oldest field of international public health"¹. The first of October 1954 will mark the second anniversary of the entry into force of the Regulations; two years' experience of their application makes possible some evaluation of their efficacy.

At the end of 1953, as noted in the Annual Report of the Director General², all but six of the active Member States of the Organization were parties to the International Sanitary Regulations. The position on 2 July 1954 is illustrated by fig. 1 and its accompanying table.

Historical background

International agreement to limit the spread of pestilential diseases was first attempted

in 1851 in Paris, but it was not until 1892 that the first international convention was drawn up in Venice. This first convention was followed by a long series of international agreements dealing with the control of one or more of the pestilential diseases in international traffic, each concerned with a specific subject and none entirely replacing a previous one on the same subject. In the period immediately following the Second World War there were more than 12 conventions or similar agreements in force and the situation was therefore somewhat confused and complicated.

WHO entered the scene in 1946. The Organization's Constitution provided for the establishment of international health regulations and created a mechanism by which such regulations could be given a flexibility which would enable them to keep pace with changing conditions and scientific advances. Legally the Constitution also took an important step in so far as international health regulations were concerned: it stated that any such regulations would come into

Chron. Wld Hlth Org. 1951, 5, 96.
Off. Rec. Wld Hlth Org. 1954, 51, 4.

(= pleasure seeking) and aggressive instincts. The object relations in which these sexual and aggressive drives are manifested are the source of conflict and anxiety, *changing in character as the child develops*. His helplessness and slow maturation making impossible comprehension and fulfilment of his desires, plus the mores of his society force adaptation to given patterns and lead to his socialization. This socialization process is aided by many mechanisms, chief among which are identification (e.g. with the parents) and sublimation (e.g., through play, in which instinctual demands are led into social channels).

Social development is inextricably interwoven with emotional development and like the latter, usually starts with family relationships. The mother-child relationship is particularly important, but the role of the father is beginning to be given increasing attention. Patterns of behaviour develop in response to parental attitude and example as the child is influenced by disciplinary measures, indications of approval or disapproval and the degree of consistency and accessibility of the parents. Play activities and contacts with other children provide other essential stimuli to development. Gradually the child reaches a state of harmonious accommodation between some degree of *self-direction and conformity to social requirements*.

The child in relation to the community

The mental health of the child, as manifested in his personality development must be viewed in relation to the society of which he forms a part. It was with regard to this aspect of mental health in childhood that the Western Pacific seminar provided study material of a varied nature. Some of the more interesting contrasts in patterns of

child care, as noted in the course of the seminar, are briefly reviewed below.

In Asian Pacific societies the father often shares the care of the child almost equally with the mother in contrast with the conventional Western idea of child care being *women's work*. The later idea is however beginning to undergo a change in many middle class families in England and the USA, where the father is taking a more active part in attending to the physical needs of his children.

Feeding the infant is in some respects much more permissive in Eastern than in Western cultures though the trend in some Western countries is towards increasing permissiveness—letting the infant eat when he wishes and how much he seems to require (*demand feeding*).

Suckling is apt to be long continued in Eastern societies—often for more than a year and up to two or three years among certain peoples.

Discipline of the young child tends to be less rigid in form and more diffuse in exercise in Eastern than in Western families.

More kin share in it and less harshly. Discipline and education are apt to be pragmatic, to be exercised in respect of actual situations as they occur rather than in form of response to general abstract rules. There is less interference with the natural growth and development of the child.

Generally speaking the child in Asian Pacific societies is encouraged at an early age to relative independence of its parents, owing to a wider family circle, the semi-public nature of much domestic life and a share in daily chores and extensive contacts and relations with other households.

In both the East and the West the pattern of family life and consequently of community life is rapidly changing. In the East, the influences of industrialization and Western culture are being felt, in the West, two opposing developments are apparent—the

e represented by the claim of each family
ber for individual expression and the
her an increasingly organized dehu
mizing socio-economic system within the
community". The relevance of such changes
the mental health of children is evident
e insecurity felt by parents as a result of
ese influences is bound to have a profound
ect on their children. Although there is a
for simplification of emotional relations
controls modern community life tends
complicate rather than to simplify the
aterial environment of the young child
is the responsibility of the parents to try
create some stability based on consistency

of action with regard to guidance and
discipline

A note of warning was sounded by the
seminar participants in attempting to heed
the advice of "experts" on child care
mothers may be prevented from enjoying
their children and the development of a
satisfying relationship between mother and
child—the most essential element in the
mental health of the child—may thereby be
impeded. All the propaganda directed at
mothers may actually create rather than allay
anxiety about the perils and difficulties of
child bearing and child rearing, and may even
promote the mental ill health of children

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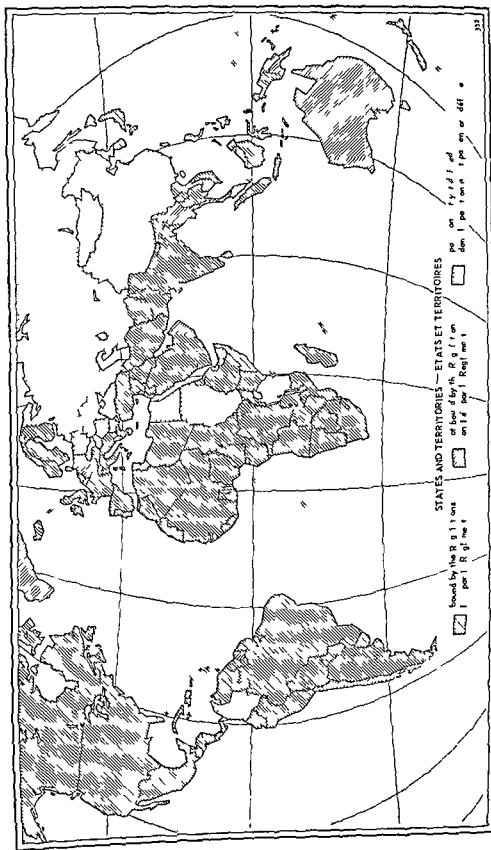
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Chron. Wld Hlth Org 1951 5 706
Off Rec Wld Hlth Org 1954 51 4

FIG 1 INTERNATIONAL SANITARY REGULATIONS

Position at 2 July 1954*



The map gives a general picture of the position of States and territories with regard to the International Sanitary Regulations as at 2 July 1954. A detailed list of the States and territories bound by the Regulations with and without reservations of those not so bound is given in the Annex. The position is not defined in the accompanying statement (page 274). Territories are classified in the names of the State or States responsible for their international relations.

force for all Members after due notice had been given of their adoption by the Health Assembly except for those Members who had notified the Director General of rejections or reservations before a specified date. This meant that no national legislative action was required by any State that had ratified the WHO Constitution in order for the regulations to become law.

Early in its existence the WHO Interim Commission established an expert committee to prepare a revision and merger of existing sanitary conventions. This revision was to take into account recent advances in the epidemiology and control of the major pestilential diseases. A special subcommittee was formed to study the sanitary control of the Mecca Pilgrimage. A first draft of the new International Sanitary Regulations was drawn up and was submitted to governments and interested international organizations for comments and suggestions. Eventually a draft text was prepared. This draft was considered by a special committee of the Third World Health Assembly which formulated a final text. On 25 May 1951 the Fourth World Health Assembly after making some amendments unanimously adopted the text of the International Sanitary Regulations as WHO Regulations No. 2.³

In his notification to Member States of the adoption of the Regulations the Director General specified that rejections or reservations must be received by 11 March 1952 or with respect to overseas and outlying territories by 11 December 1952. Of the 89 countries that could have submitted reservations only 25 did so. The total number of reservations was 73 of which 35 were accepted with or without modification and 38 were rejected. Eleven of the submissions were regarded as proposed amendments to the text of the Regulations. The Fifth World Health Assembly considered all these reser-

vations and took decisions which were subsequently communicated to Member States for relevant action. In most instances the decisions of the Assembly were accepted. On the date of entry into force of the Regulations 58 countries were bound by them—53 without reservations and 5 with reservations. The Sixth World Health Assembly considered reservations submitted by Member States on behalf of their overseas and outlying territories. The decisions of the Assembly were communicated to the Member States concerned.

It was understood by several of the American republics that separate action was required by States parties to the Pan American Sanitary Code to abrogate those of its provisions which referred to international traffic and quarantine. A protocol providing for such abrogation was drawn up and opened for signature at Havana on 24 September 1952.

Application of the Regulations

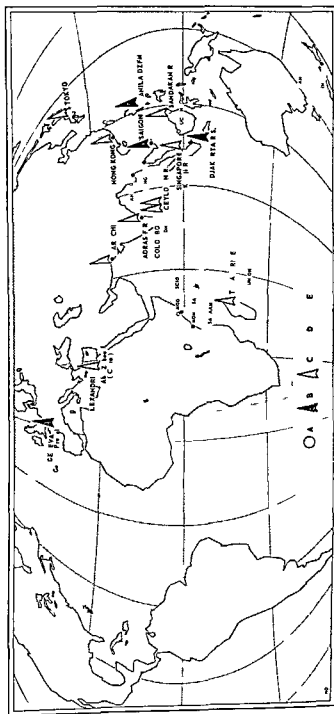
Many problems have arisen in applying the new International Sanitary Regulations. As pointed out by the Director General in his report on the first year's application of the Regulations:

"This initial period must have been a difficult one for national administrations, local authorities, transport companies and individual travellers, procedures and practices which had been followed for a century or more had to be changed, measures hitherto thought necessary for the security of a country from the importation of quarantinable disease had to be amended or suppressed entirely, national legislation in almost all countries had to be revised."⁴

However, most of the difficulties have been met without undue complication.

"There [has been] much correspondence between administrations and the Organization about such difficulties. Almost without exception, the advice and opinions given by the Organization and the requests that it has made to Member States to alter

FIG 2 WIRELESS STATIONS TRANSMITTING WHO RADIO TELEGRAPHIC EPIDEMIOLOGICAL BULLETINS *



- A = Areas reached by Genève Prangins stations
- B = Stations transmitting daily
- C = Stations transmitting once or twice a week
- D = Stations receiving the Bulletin from Aranyt R N
- E = Stations receiving the Bulletin from Saigon

For the list of stations transmitting the Bulletin see p. 263 No. 26 of the Weekly Epidemiological Bulletin

procedures or modify measures have been so acted upon as to show clearly the desire and the intention of States throughout the world to apply the International Sanitary Regulations in a spirit of mutual co-operation, understanding and goodwill.

Not one dispute as to the application of the Regulations had to be referred to the Committee on International Quarantine for consideration. There were several points on which the committee was asked for interpretation or recommendation but none called for arbitration. This also shows the friendly and co-operative attitude which has been apparent in this introductory phase of the Regulations and which augurs well for their success " 5

A detailed report on the working of the Regulations as seen by Member States, other bodies and the Organization was prepared by the Director General for the first meeting of the Committee on International Quarantine and has since been kept up to date as additional information has been received from States party to the Regulations. This report and other documentation concerning the Regulations—including that relevant to the particularly difficult problem of delineation of yellow fever endemic and receptive zones—a subject much discussed at the Seventh World Health Assembly—are being published in *Official Records of the World Health Organization* No. 56.

Epidemiological information

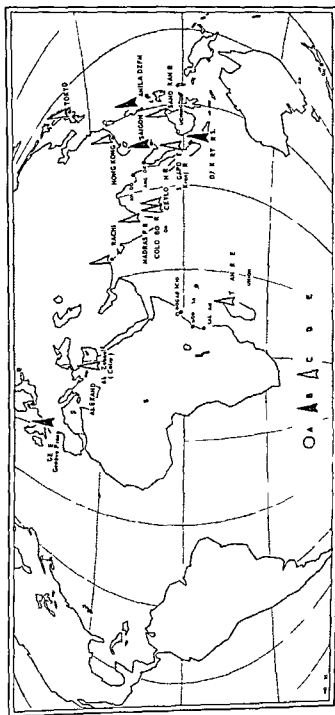
Essential to the application of the International Sanitary Regulations is the dissemination of epidemiological information so that health authorities may have knowledge of the presence of communicable diseases in other countries and thus be prepared to take steps to prevent importation of the infection into their own country. Collecting and trans-

mitting such information is one of the most important functions of WHO.

National administrations should communicate to WHO as early and as rapidly as possible "all items which they have undertaken to supply to the Organization under the International Sanitary Regulations and any other information which they judge to be of importance to international traffic or of interest to other health administrations " 6. Once this information is received by WHO it is disseminated by the most appropriate means—broadcast by the radio stations at the Organization's disposal (see fig. 2)—sent to health administrations by telegram or airmail or published in the *Weekly Epidemiological Record* issued from Geneva or in similar weekly epidemiological bulletins sent out from Alexandria, Singapore or Washington. Radio and telegraphic transmission is now facilitated by the use of the new Epidemiological Cable Code (CODEPID) which was published and distributed in 1953.

* * *

The International Sanitary Regulations have probably passed through their most crucial period and have begun to prove their worth. These Regulations which "define the rights of millions of international travellers and protect the many more millions staying at home in countries receptive to one or more of the quarantinable diseases " 7 will not remain static but will be revised as further experience and changing conditions demand. Their successful application depends in the future as in the past on the "loyal co-operation and mutual comprehension " 8 of all countries.



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E = Stations receiving the Bulletin from Saigon

For the list of citations concerning the Bulletin see page 63 No 26 of the Weekly Epidemiological Review

NOT BOUND

Member States

Australia
Burma

Chile
Germany Federal Republic¹

Overseas and Outlying Territories

Australia
All territories

Denmark
Faroe Islands
Greenland

Non Member States

Liechtenstein
Sultanate of Muscat and Oman

POSITION NOT YET DEFINED

Member States

Egypt^{*}

Inactive Member States

Albania
Bulgaria
Byelorussian SSR
Czechoslovakia
Hungary

Poland
Roumania
Ukrainian SSR
Union of Soviet
Socialist Republics

Overseas and Outlying Territories

Australia New Zealand
United Kingdom
Nauru Island

United Kingdom
British Solomon Islands
British Somaliland
Brunei
Falkland Islands
Fiji (including Tonga)
Gambia
Gilbert and Ellice Islands
Hong Kong

United Kingdom (continued)
Leeward Islands (Antigua^{*} only)
Malta
Sarawak
Singapore^{*}
Tanganyika
Windward Islands (Dominica,
St Lucia, St. Vincent)

Egypt United Kingdom
Sudan

Non-Member States and Territories

Andorra
Colombia

Mongolian People's Republic
San Marino

Tanger International Zone

A decision is awaited pending the completion of constitutional procedures.

Rejections or reservations made by territories marked with an asterisk have been considered by the World Health Assembly. Communications defining the position are awaited from the government concerned.

Poliomyelitis

WHO will shortly publish a monograph on poliomyelitis comprising 13 authoritative and well illustrated articles by internationally known workers J R Paul (USA) J H S Gear (Union of South Africa) M J Freyche & J Nielsen (WHO) R Debre (France) W Ritchie Russell (Great Britain) H C A. Lassen (Denmark) S Gard (Sweden) A J Rhodes (Canada) J F Enders (USA) A B Sabin (USA) H Koprowski (USA) W McD Hammon (USA) and A. M M Payne (WHO). The subjects included are epidemiology clinical aspects virology immunology and control. This monograph provides an intensive survey of contemporary poliomyelitis research and should be valuable to clinicians and to public health workers.

BOUND WITHOUT RESERVATION

Member States

Afghanistan
Argentina
Austria
Belgium
Bolivia
Brazil
Cambodia
Canada
China
Costa Rica
Cuba
Denmark
Dominican Republic
Ecuador
El Salvador
Ethiopia
Finland
France
Guatemala
Haiti
Honduras
Iceland
Indonesia
Iran
Iraq
Ireland
Israel
Italy
Japan
Jordan Hashemite
Kingdom of the
Korea
Laos
Lebanon
Liberia
Libya
Luxembourg
Mexico
Monaco
Nepal
Netherlands
New Zealand
Nicaragua
Norway
Panama

Paraguay
Peru
Portugal
Spain
Sweden
Switzerland
Syria
Thailand
Turkey
United Kingdom of
Great Britain and
Northern Ireland
United States of
America
Uruguay
Yemen
Venezuela
Viet Nam
Yugoslavia

Overseas and Outlying Territories

Belgium
Belgian Congo
Ruanda Urundi

France
Comoro Islands
French Cameroons
French Equatorial
Africa
French Settlements
in India
French Settlements
in Oceania
French Somaliland
French Togoland
French West Africa
Madagascar and
dependencies
Morocco (French
Zone)¹
New Caledonia and
dependencies
St Pierre and
Miquelon

Tunisia¹
Italy
Somalia

Netherlands
Netherlands Antilles
Netherlands New
Guinea

New Zealand
Island Territories
Western Samoa

Portugal
Angola
Cape Verde Islands
Macao
Mozambique
Portuguese Guinea
Portuguese India
Portuguese Timor
São Tomé and
Príncipe

Spain
Morocco (Spanish
Zone)¹
Spanish Guinea
Spanish West Africa

United Kingdom
Aden
Bahamas
Bahrain
Barbados
Basutoland
Bechuanaland
Bermuda
British Cameroons
British Guiana
British Honduras
British Togoland
Cyprus
Gibraltar
Gold Coast
Jamaica
Kenya

Kuwait
Leeward Islands
(Montserrat, St
Christopher & Nevis,
Virgin Islands)
Mauritius
Malaya Federation of
Nigeria
North Borneo
Qatar
Rhodesia and
Nyasaland
Federation of
St Helena
Seychelles
Sierra Leone
Swaziland
Trinidad
Trucial Oman
Sheikdoms
Uganda
Windward Islands
(Grenada only)
Zanzibar

United States of America

Alaska
American Samoa
Guam
Hawaii
Pacific Islands (Caro-
line, Mariana and
Marshall Islands)
Panama Canal Zone
Puerto Rico
Virgin Islands of the
United States

France United Kingdom

New Hebrides

Non Member State

Vatican City

BOUND WITH RESERVATIONS

Member States

Ceylon (in respect of Articles 37 68 74 76 104 and
Appendix 3)
Greece (in respect of Article 69)
India (in respect of Articles 42 43 70 74 100 and
Appendix 3)
Pakistan (in respect of Articles 42 43 70 74 100
and Appendix 3)
Philippines (in respect of Article 69)

¹ Associate Member

Saudi Arabia (in respect of Articles 61 63 64 69
A1 A6)
Union of South Africa (in respect of Articles 40 42
43 76 77)

Overseas and Outlying Territories

Netherlands
Surinam (in respect of Articles 17 and 56)
Union of South Africa
South West Africa (in respect of Articles 40 43 43
76 77)

though methods of attaining them were often diverse "

The WHO survey had shown that there was a wide range of workers concerned with some or all aspects of nursing in Africa and considerable differences in educational standards length of courses functions grades and titles Both in the survey reports and in the conference discussions two distinct trends in development became apparent

(1) a growth comparatively recent of interest in nursing as a career for African girls paralleling gradual improvements in the general education of girls and

(2) a more or less general policy of giving a basic nursing course to various categories of male health workers—from first aid and dresser grades to hospital or medical assistants—who it was felt would be an essential part of the health services of many areas for many years to come

Although some consideration was given to the training of male health workers the conference was devoted principally to the problems of the education of girls since it seemed that in the future nursing services—particularly in urban and closely populated areas—would be increasingly carried out by women

There was general agreement on the fact that trained midwives were needed everywhere However some kind of liaison with traditional midwives to improve their practices seemed advisable as an interim measure and a sort of preparation for the eventual acceptance of the trained midwife The Nursing Consultant urged that the training of the midwife be combined with that of a general health worker to produce a community worker who could encourage the development of preventive as well as curative health services Such a worker would be in a good position to come into contact with the women of the community and through them to pass on health information and promote satisfactory health practices

The loss of nurses through marriage and pregnancy and the employment of married women in nursing were subjects of considerable discussion It was concluded that even if a woman gave up her career upon marriage her training would not be completely wasted "since she would use her knowledge for the benefit of her family and her community" Opinions were varied concerning the employment of married women while these women had more status in the community and were therefore valuable as nurses especially in maternal and child health work their family responsibilities were apt to cause frequent absenteeism and other difficulties

Early in the conference it was pointed out that the training of nurses in countries of Africa presented special problems As stated by the Nursing Consultant in her report

It is not easy to plan a programme of nursing education which fulfils its first duty of preparing as many nurses as possible for a service the needs of which are so vast that one cannot yet assess them and at the same time establish nursing as a profession for African women with a status which will endure the first demands large numbers and to obtain these at present means acceptance of a low educational standard while the second might presuppose a type of training which will establish a small group of elite "

No uniform pattern of education or ready solution for these problems could be suggested by the conference participants It was stressed however that in all training programmes instruction in the care of patients must be combined with self-development of the student Some concern was expressed "lest efforts to place the training of nurses on the highest possible level were aimed at the advancement of the profession rather than at serving the patient but the answer was that this danger would be obviated by making all training " patient-centred "

Awareness of the significance of their cultural background in the training of African girls as nurses permeated the discussions

NURSING EDUCATION IN AFRICA

WHO Conference in Kampala

In Africa south of the Sahara, nursing education is still largely in the early stages of development and nursing services and training vary considerably from country to country. Until recently, no attempt had been made to study the various training schemes so that those responsible for the development of health services and of nurses' education in particular might profit from the experience of others. In 1953 a nursing consultant of the WHO Regional Office for Africa made a survey of nursing education facilities and personnel in 15 territories of Equatorial Africa—Angola, Belgian Congo, French Equatorial Africa, French West Africa, Gold Coast, Kenya, Liberia, Nigeria, Northern Rhodesia, Nyasaland, Ruanda Urundi, Somaliland Protectorate, Tanganyika, Uganda, and Zanzibar. Her report on the survey subsequently served as the basis of discussions at a conference sponsored by WHO on the development of nursing education in Africa south of the Sahara. This conference, held in the autumn of 1953 in Kampala, Uganda, was the first in the region on the subject of nursing. It brought together 33 delegates from 23 countries to add to the information supplied by the WHO survey and to exchange views on nursing education needs, problems, and plans. A report on the conference, which includes annexes on the surveys of individual territories and contains valuable data not to be found elsewhere, has recently been made available.¹

The conference was opened by Lady Andrew Cohen, wife of the Governor of Uganda, who in recounting her impressions of a tour of a remote part of Uganda, set the scene for consideration of nursing educa-

tion in relation to the social, economic, and cultural situation. Lady Cohen stressed the social aspects of training nurses in Africa, the need for preparing and aiding girls to assume a responsible position in communities in which conditions were far different from those encountered during their training, the difficulties posed by eventual loss to the profession of many girls trained as nurses, and the utilization of their training in their subsequent roles as wives and mothers once they had left the profession, and the problem of raising the status of the nursing profession in Africa. She also called attention to the desirability of emphasizing preventive medicine, of turning emphasis away from the building of hospitals and towards the building up of corps of health visitors and home nurses, and of promoting health education directed towards arousing health consciousness in the community.

Different philosophies regarding the nursing profession were revealed during the conference, reflecting differences in national policies. The 11 countries of the Belgian, French, and Portuguese powers were represented at the conference solely by doctors, whereas the countries within the British sphere sent only nursing delegates. This seemed to indicate a fundamental difference in approach to nursing education: the former countries apparently consider that physicians should supervise the training and work of nurses; the latter believe that nurses should be trained and supervised largely by qualified members of their own profession. Despite this divergence of opinion—and the consequent variation in ideas concerning the functions and preparation of nurses—there was a broad base of agreement on goals.

the use of freeze dried sera in the serology of syphilis the stability of blood and serum samples transmitted by post and the result obtained so far with the *Treponema pallidum* immobilization technique (TPI test)

The TPI test which was basically still under research three years ago has meanwhile been studied in more than 20 laboratories in Europe and elsewhere. A cooperative study among laboratories now carrying out the TPI test has been initiated by WHO and the efforts of serologists in several laboratories have resulted in a new test the *Treponema pallidum* agglutination (TPA) test which so far has given encouraging results although "considerable time and extensive investigations [will be] required before the place of this procedure in the serodiagnosis of the treponematoses can be evaluated". While both the TPI test and the TPA test represent valuable supplements to available laboratory techniques the subcommittee agreed that for the time being reliance must continue to be placed on the use of routine serological reagin tests and that further work towards the standardization of antigens and serological methods is necessary.

The subcommittee noted that provisional international reference preparations of cardiolipin and lecithins had been established by the WHO Expert Committee on Biological Standardization². These preparations have for some time been distributed by the Statens Seruminstitut Copenhagen to recognized laboratories to enable them to check the reactivity of newly produced batches. Cardiolipin lecithins and cardiolipin antigens stored at 37°C and 56°C for two weeks were found to remain unchanged in reactivity. It was agreed that further studies on this problem would be undertaken.

The subcommittee invited laboratories to publish their experience on the relationship between the sensitivity of cardiolipin antigen

and the percentage of lecithin contained in it and also on the experimental error in serological testing. It was recommended that antigen producers should check the keeping quality of their products with a view to recalling preparations likely to have become defective and that health authorities should in consultation with their leading laboratories consider the central purchase of antigen.

The subcommittee examined several reports on the use of freeze-dried sera in the serology of syphilis and came to the conclusion that such sera from syphilitic donors had proved themselves to be sufficiently stable to be used for studies on sensitivity. It decided that the thermo-stability of reactive sera from non syphilitics should be examined and that criteria for the selection of such sera should be established. Statistical evaluation of results from the testing of freeze-dried sera should be undertaken.

The subcommittee also studied a document listing the serological laboratories in Member States and their testing procedures and found that more uniformity was desirable. The information collected from countries all over the world on the total number of samples examined per year the seroreactions employed the number of seroreactions used for each sample and other technical points is given in an extensive annex to the report and provides interesting information for serologists. The subcommittee did not wish to publish a list of recommended methods for the serology of syphilis until adequate information on sensitivity and specificity was available but it recommended that a manual on selected methods to be used by WHO field teams should be compiled.

The activity of the International Treponematoses Laboratory Center and of the WHO Serological Reference Centre was considered. The laboratory work done by the WHO field teams was studied in detail and the importance of using serological testing in mass campaigns against all the

It was felt that African girls going into the nursing profession at this time were particularly exposed in their personal experiences during training to conflicts of cultural change brought about by the material educational and religious forces of European civilization in Africa. Traditional beliefs were often in conflict with the Western ideas to which they were expected to adapt. Even the assumption of responsibility by unmarried girls represented a departure from tradition and added to the problem of gaining prestige for the nursing profession since these girls usually had little status in the community. A number of suggestions were made as to how students could be helped to adjust to cultural changes and be prepared for their work. Careful selection of students—choosing girls from suitable families—was considered of basic importance. Another essential was understanding and sympathy on the part of all those concerned with teaching students in order to reach the individual trainee win her confidence and provide a sense of security to dispel the cloak of apathy which surrounded the African whenever he felt confused and insecure.

this could be facilitated by having Africans in senior educational posts 'to interpret new values to students from within their own culture'. Other factors were the provision of good facilities, for housing and recreation as well as for teaching and the granting of sufficient freedom in off duty time to encourage self development and self discipline.

In summary, the report states "the building of the new profession of nursing for women in African society [rests] fundamentally on the status given to the nurse." Achieving the desired status depends on the recruitment of highly educated members of the community for nurses training gaining and keeping the support of influential groups of women in the population and "the breadth and depth of education, technical and cultural, given to students. The last point is particularly important. In the words of one conference participant

"The principles upon which instruction is based in association with the traditional African principles which constituted the student's initial basis of training will help to build the African civilization of the future. This is the supreme purpose to the attainment of which the governments and specialized agencies have directed their efforts."

Reports of Expert Groups

SEROLOGICAL AND LABORATORY ASPECTS OF TREPONEMATOSES

After an interval of three years the subcommittee dealing with the serological and laboratory aspects of treponematoses was convened for the third time. The subcommittee's report on this session is now available.¹

From an international viewpoint states the introduction to the report, the nature

and magnitude of the problem of treponemal infections overshadow by far that encountered in the non treponemal venereal infections and major emphasis continues to be placed by the subcommittee on the serology and laboratory aspects of the treponematoses.

Among the most important subjects discussed by the subcommittee were the production control and use of cardiolipin antigens

¹ *Wld Hlth Org techn Rep Ser* 1954 79 50 pages
Price 3.6 \$0.50 or Sw fr 2.—Published in English and in French

the use of freeze-dried sera in the serology of syphilis the stability of blood and serum samples transmitted by post and the results obtained so far with the *Treponema pallidum* immobilization technique (TPI test)

The TPI test which was basically still under research three years ago has meanwhile been studied in more than 20 laboratories in Europe and elsewhere. A co-operative study among laboratories now carrying out the TPI test has been initiated by WHO and the efforts of serologists in several laboratories have resulted in a new test the *Treponema pallidum* agglutination (TPA) test which so far has given encouraging results although "considerable time and extensive investigations [will be] required before the place of this procedure in the serodiagnosis of the treponematoses can be evaluated". While both the TPI test and the TPA test represent valuable supplements to available laboratory techniques the subcommittee agreed that for the time being reliance must continue to be placed on the use of routine serological reagin tests and that further work towards the standardization of antigens and serological methods is necessary.

The subcommittee noted that provisional international reference preparations of cardiolipin and lecithins had been established by the WHO Expert Committee on Biological Standardization². These preparations have for some time been distributed by the Statens Serum Institut Copenhagen to recognized laboratories to enable them to check the reactivity of newly produced batches. Cardiolipin lecithins and cardiolipin antigens stored at 37°C and 56°C for two weeks were found to remain unchanged in reactivity. It was agreed that further studies on this problem would be undertaken.

The subcommittee invited laboratories to publish their experience on the relationship between the sensitivity of cardiolipin antiserum

and the percentage of lecithin contained in it and also on the experimental error in serological testing. It was recommended that antigen producers should check the keeping quality of their products with a view to recalling preparations likely to have become defective and that health authorities should in consultation with their leading laboratories consider the central purchase of antiserum.

The subcommittee examined several reports on the use of freeze-dried sera in the serology of syphilis and came to the conclusion that such sera from syphilitic donors had proved themselves to be sufficiently stable to be used for studies on sensitivity. It decided that the thermo-stability of reactive sera from non syphilitics should be examined and that criteria for the selection of such sera should be established. Statistical evaluation of results from the testing of freeze-dried sera should be undertaken.

The subcommittee also studied a document listing the serological laboratories in Member States and their testing procedures and found that more uniformity was desirable. The information collected from countries all over the world on the total number of samples examined per year the seroreactions employed the number of seroreactions used for each sample and other technical points is given in an extensive annex to the report and provides interesting information for serologists. The subcommittee did not wish to publish a list of recommended methods for the serology of syphilis until adequate information on sensitivity and specificity was available but it recommended that a manual on selected methods to be used by WHO field teams should be compiled.

The activity of the International Treponematoses Laboratory Center and of the WHO Serological Reference Centre was considered. The laboratory work done by the WHO field teams was studied in detail and the importance of using serological testing in mass campaigns against all the

treponematoses was emphasized. It was recommended that a field team should undertake studies on several tests in a representative area before taking any decision as

to the most suitable test (or tests) to employ in the project. The chosen test should then be used to evaluate the effect of treatment on the serological results.

Review of WHO Publications

HEALTH STATISTICS *

Following an idea broached at the International Conference for the Sixth Revision of the International Lists of Diseases and Causes of Death held in Paris in 1948, 29 countries have established national committees on vital and health statistics. The setting up of these committees has been actively encouraged by WHO. Their aims are to co-ordinate activities relative to health statistics within each country to stimulate the collection and use of vital and health statistics, and to provide a link between WHO and national institutions responsible for health statistics.

In 1953 the time appeared ripe for convening a first international conference of these national committees¹ in order to enable them to interchange ideas on the structure and functions they should have and on their relationship with international organizations such as the United Nations and WHO. The conference was held in October 1953 in London. It provided an opportunity to review the present status of some of the most important categories of health statistics. For instance the types of health statistics needed in countries at different stages of development were discussed and recommendations were made on means of obtaining these statistics and on the part WHO should play in helping to

obtain them. Among the other important problems dealt with were those of how to secure a wide appreciation of the value and significance of health statistics and of the best methods of training personnel for statistical work.

Many papers of a technical nature were prepared for the conference by recognized experts. Most of these papers have now been published in full or in an abridged form in a recent number of the *Bulletin of the World Health Organization*² so that they might be available for use by public health workers, medical statisticians and others to whom they would be of interest and value.

In the first paper P. M. Hauser discusses the application of sampling methods to vital registration systems and vital statistics showing the opportunities for their use and the advantages to be derived from them both in the less developed areas of the world and in areas where more or less complete registration exists. In the second paper F. F. Harris considers sampling methods in practice giving a detailed account of their use in a sickness survey in Canada in 1950-51.

The essentially confidential nature of medical records must be respected in reporting morbidity and causes of death and in the use of statistical data. In two papers M. G. Neurdenburg and M. J. Aubenque suggest how the principle of medical secrecy may be adhered to without impairing the value or fulness of statistics and give

* This review is drawn from the introduction to a number of the *Bulletin of the World Health Organization* which is devoted to this subject.

¹ The report of the conference has been published in *World Health Organization Technical Reports* 1954: 85.

examples of the law and practice in the Netherlands and in France

A problem of some concern to medical statisticians is how to secure the co-operation of persons supplying statistical data. Authors from six different countries—M J Aubenque (France) R M Blaikley (England) F F Harris (Canada) R B Lal (India) M G Neurdenburg (Netherlands) and R de Shelly Hernández (Venezuela)—give their views on this problem. Somewhat allied to this is the question of securing a wide appreciation of health statistics a matter discussed by A M do Amaral Pyrrait M J Aubenque R Benjamin J S de Groot and R Kohn

In another paper Dr Percy Stocks describes the types of health statistics that would be of the greatest practical value to countries with only slightly developed public health and vital registration systems and the means by which these statistics may be obtained

H L Dunn outlines the objectives underlying future patterns of work of national committees on vital and health statistics relating the aims of national systems of statistics to the aims of the committees

Two papers from the *Demographic and Social Statistics Branch* of the Statistical Office of the United Nations are included in this number of the *Bulletin* the first is a provisional compilation of the names of the agencies responsible for vital registration and vital statistics at the national and local levels in different countries the second analyses the types of vital statistics available in the 58 major statistical areas of the world. These studies are followed by a summary table prepared by WHO of some important health statistics available in different countries. Finally 20 other contributions dealing with various aspects of vital and health statistics are to be found in the section *Notes and Reports*

THERAPEUTIC PROPHYLACTIC, AND DIAGNOSTIC SUBSTANCES

There is considerable diversity in problems with regard to therapeutic prophylactic and diagnostic substances which require to be solved at the international level. Such problems as the production of an international pharmacopoeia and the compilation of lists of international non proprietary names for drugs have been described in previous issues of the *Chronicle*. The present article deals with two others biological standardization and the control of addiction producing drugs to which a recent number of the *Bulletin of the World Health Organization*¹ is devoted

Standardization

The international standardization of therapeutic substances has a long history extending back as far as 1897 when Paul Ehrlich made internationally available a standard preparation of diphtheria antitoxin and defined a unit of antitoxic potency in terms of that preparation. This pioneer work was consolidated by the Health Organization of the League of Nations as one of its earliest actions. In 1922 it formally recommended adoption of the Ehrlich Unit as the International Unit of Diphtheria Antitoxin and defined this international unit in relation to the International Standard for Diphtheria Antitoxin which was to be maintained at,

¹ *Bull. Wld. Hlth. Org.* 1954 10 N 6. The present title is drawn from the introduction to this number of the *Bull. Wld. Hlth. Org.*

and distributed from, the Statens Serum institut in Copenhagen under the auspices of the League of Nations. The establishment of international standards and international reference preparations and the definition of international units of therapeutic potency in terms of these standard preparations have continued steadily since that date uninterrupted even by the Second World War, so that as many as 59 of these standards and reference preparations are now maintained on behalf of WHO by the Statens Serum institut and by the National Institute for Medical Research in London.

Since specimens of the international standards are regularly distributed to duly authorized laboratories throughout the world they naturally become depleted in the course of time and have to be replaced. The first paper in the *Bulletin* by K. H. Coward and J. O. Irwin illustrates the international collaborative effort involved and the special problems—often peculiar to each particular standard—which arise when one of these preparations (in this case the International Standard for Vitamin D) needs to be replaced. There follow two papers by J. H. Humphrey and his colleagues which show some of the particular considerations that have to be borne in mind when providing international standards or reference preparations of substances such as Penicillin K and Dihydrostreptomycin whose chemical composition is unequivocally established and which can be produced in crystalline form.

Before the Second World War the Health Organisation of the League of Nations planned an international collaborative investigation of a proposed International Standard Antityphoid Serum intended for the serum therapy of typhoid fever and prepared by A. Felix and G. F. Petrie. Because of the efficacy of chloramphenicol, the serum therapy of typhoid fever is, however, no longer routinely practised and the original purpose of this proposed standard has therefore lost

its validity. But, in describing this provisional international standard, in the next paper of this series A. Felix makes a case for its usefulness at the present time in his proposed procedures for the standardization of typhoid vaccines. Furthermore, the provisional International Standard Antityphoid Serum is of topical interest in that it forms the basis for one of a series of eight proposed international standard agglutinating sera prepared by A. Felix and H. S. Bensted with a view to standardization of the serodiagnosis of typhoid and paratyphoid fevers. A contribution by these workers describes the proposed international standards and gives suggestions for their collaborative international investigation and utilization.

The provision of international standard preparations for serodiagnostic purposes such as those envisaged for the typhoid group of fevers, is quite a recent departure from the time honoured practice of providing standards almost exclusively for therapeutic or prophylactic substances. In fact until 1951 the only international biological standards not of a therapeutic or a prophylactic nature were the Standard for Old Tuberculin (1931) and the Standard for Purified Protein Derivative of Mammalian Tuberculin (1951). Although these are diagnostic preparations they are of course not used for *in vitro* serodiagnosis. The first international standard preparation for use in serodiagnosis was that for Anti *Brucella abortus* Serum established in 1952, which is described in a paper by A. W. Stableforth. This standard is intended for use in both human and veterinary medicine—a fact which emphasizes the desirability of an integrated approach to the zoonoses by physicians and veterinarians. The author makes a plea in his article for the use of a unit notation instead of the traditional 'titre' in measuring and describing the agglutinating activity of immune sera. This is a novel concept in immunological practice and its advantages are

corently set forth in two important contributions by N K Jerne and by A A Miles which are worthy of close attention by all laboratory workers engaged in serodiagnostic work

Several papers deal with the establishment of new international standards. One of the reasons for establishing international biological standards is the widespread use of modified or purified variants of substances previously used equally widely in a different form. For example A Tasman and J D Lebret report an extensive investigation of a purified aluminium phosphate adsorbed diphtheria toxoid. Purification sometimes eliminates the possibility of accurately standardizing the purified substances in relation to a standard preparation composed of the original unpurified material since it may be found that the log-dose response curves obtained with the two types of material are not parallel—one of the essential requirements for a valid bio-assay. This question of the influence of the physical form of a biological preparation on the results of its assay in relation to a standard preparation of a significantly different physical constitution has in fact recently engaged the close attention of the WHO Expert Committee on Biological Standardization which has accordingly found it desirable to establish two separate international standards for diphtheria toxoid—one of the plain purified material and one of this material adsorbed onto aluminium hydroxide. A paper by M Kurokawa and his colleagues may be regarded as a footnote to the general problem of the influence of purification of a toxoid on its immunological properties. D A Long and his colleagues in another contribution describe a refined technique for the assay of tuberculin re-affirming by means of this technique that assays of one type of tuber-

culin in terms of another are not necessarily valid and that the Expert Committee on Biological Standardization was therefore justified in its recent decision to establish an International Standard for Purified Protein Derivative in addition to the long established International Standard for Old Tuberculin

Addiction-producing drugs

The necessity for international action in suppressing the illicit production manufacture import export and consumption of drugs liable to produce addiction needs no stressing. Such action is largely legislative in character the legislative authority resting in the main on a number of international conventions and their protocols. The task of providing for the implementation of these important documents is a primary responsibility of several organs of the United Nations—namely the Commission on Narcotic Drugs of the Economic and Social Council the Permanent Central Opium Board and the Drug Supervisory Body. WHO is charged with the duty of advising on the highly specialized technical issues involved. The above mentioned bodies therefore constantly call upon the Organization for guidance in such matters. For example in a recent resolution of the Economic and Social Council WHO was invited to provide in consultation with the United Nations Secretariat scientific information on a number of questions concerning addiction producing drugs. A paper by O J Braenden and P O Wolff who survey chemical aspects of synthetic substances with morphine like effect is the first of a series of studies carried out in response to this resolution the full terms of which are given in a footnote to their article

EPIDEMIOLOGICAL AND VITAL STATISTICS

Two recent numbers of the *Epidemiological and Vital Statistics Report* contain compilations of statistical data on certain diseases. One is devoted to mortality from gastritis duodenitis enteritis and colitis except diarrhoea of the newborn and to cases of and deaths from cholera plague smallpox relapsing fever influenza and malaria.¹ The other lists cases of and deaths from cholera and plague and gives tables on cases and deaths due to some of the principal zoonoses.

Epidem. vital. Statist. Rep. 1954 7 133

An annex to the latter contains a list of the notifiable zoonoses in various countries as on 31 December 1951.

A *Weekly Epidemiological Record* supplement² shows the position of countries and territories under the International Sanitary Regulations and lists the ports approved and designated for the issue of deratting and deratting exemption certificates giving the situation as on 2 July 1954.

Epidem. vital. Statist. Rep. 1954 7 253

Wkly. epidem. Rec. 1954 29 Supplement to No. 6 2 July

Health Legislation

COMPARATIVE STUDY MIDWIVES

No comprehensive study has yet been made of the national legislation governing the more important aspects of the profession of midwife although the international congresses of midwives held before 1940 dealt with some of the legal problems connected with the training professional and other responsibilities of midwives and related subjects. In order to fill this gap a study of the present tendencies in the legislation governing midwives and midwifery in about 30 countries has recently been published in the *International Digest of Health Legislation*.¹ It complements a previous study on nursing which appeared in the *Digest* in 1953.

The profession of midwife is today becoming more closely associated with that of nursing in contrast to its former independent position. This closer relationship between the two professions is one of the important

facts that emerges from the study. It may be seen in the basic training of the midwife which nearly always includes a partial and sometimes a complete, nursing course, in the fact that the two professions are frequently regulated by a common council and in the creation of such titles as maternity nurse or nurse midwife. This closer relationship is the result of the historical development of the profession itself, for whereas about fifty years ago the scope of a midwife's practice was limited to giving assistance to a mother during delivery, advances in medicine and in public health in recent years have made it necessary for the midwife to extend her practice to include prenatal and postnatal care and to employ nursing techniques essential to ensure normal delivery and postpartum.

In certain countries such as the USA midwives have been almost entirely supplanted by physicians, in others such as England and Wales and the Scandinavian countries they still play a leading role. In

¹ *Int. Dig. Hlth Leg.* 1954 5 433. The study on comparative legislation will be available as an offprint. Price 3/6 \$0.50 or Sw. fr. 2.—

² *Int. Dig. Hlth Leg.* 1953 4 463. This is also available as an offprint.

countries where there is a shortage of medical and auxiliary medical workers most mothers are still delivered by women whose knowledge of midwifery is more often than not empirical. The role of such indigenous midwives may thus be considered as of a historical nature and although in such countries the health authorities are conscious of the need to provide qualified midwives and to restrict the practice of midwifery to such persons their legislation nevertheless takes the existence of the unqualified midwives into account. Until a sufficient number of qualified midwives becomes available and in order to safeguard public health the legislation may require the indigenous midwives to follow an elementary course of training or grant them only a temporary licence to practise. In certain countries the legislation stipulates that in specified areas only qualified midwives may practise. Even in the most advanced countries the elimination of the unqualified midwife was achieved only many years after midwifery legislation was first enacted.

It is interesting to note that in some countries such as the Federal Republic of Germany, England and Wales, Austria and Finland a midwife is required to follow refresher courses at regular intervals throughout her career. This obligation is peculiar to midwives. In Austria failure to attend such courses may result in a midwife's permission to practise being withdrawn.

In general the professional regulations are laid down in detail. Their aim is to set precise limits on the professional competence of the midwife and to prevent her from engaging in practices appertaining to the medical profession. The laws stipulate that breaches of these regulations because they may endanger the life of a mother or her child render the midwife concerned liable to disciplinary action. Moreover in the event of accident the penal or civil responsibility of the midwife may be involved.

Nevertheless more liberal tendencies may be discerned in certain countries with respect to the professional acts a midwife may perform. Thus analgesia, episiotomy, artificial rupture of the foetal membranes, internal examination, the use of ecboic substances, external or internal version etc. may under certain conditions be practised by the midwife. The laws frequently specify the circumstances before, during, or after delivery under which a midwife must call in medical aid. In order strictly to limit professional practice and to prevent accidents, the laws list the instruments and drugs a midwife may employ. Further safeguards laid down in legislation are professional supervision and the obligation on every midwife to keep a register of cases.

The study of comparative health legislation on midwives includes the following chapters: definitions, professional training (admission to training schools, midwives training schools, period of training, number of labours to be witnessed or conducted during training, examinations, refresher courses and further training courses, maternity nurses), administrative regulations (right to practise, recognition of foreign diplomas, midwives boards, membership of midwives boards, registration of midwives, removal from the register and suspension from practice, protection of title, uniform and insignia), professional regulations (requirements of practice, calling in medical aid, drugs and instruments, supervision of midwives, records, deliveries at a midwife's home), conclusion.

The care with which legislators have framed the laws requiring midwives to undergo a thorough professional training and defining the rules of professional practice is but the reflection of the responsibility a midwife is called upon to bear. As stated in a report by the British Ministry of Health "it must be borne in mind that at each confinement [the midwife] is responsible for at least two lives."

Notes and News

Malaria Conference for Western Pacific and South East Asia Regions

A malaria conference for the Western Pacific and South East Asia Regions will take place from 15 to 27 November 1954 in Taipei (Taiwan). Two principal subjects will be discussed. The first of these is the possibility of control by residual insecticides or other means of malaria transmitted by *Anopheles minimus flavirostris*, *A. mangyanus* the *A. leucosphyrus* group, *A. sundaiensis* and the *A. punctulatus* group. In areas where these species are responsible for malaria transmission considerable doubt has been expressed as to the possibility of controlling them by residual insecticide spraying. It has recently been shown in the Philippines however that malaria transmitted by *flavirostris* could be controlled by DDT (see below). Experimental pilot projects are now being carried out against *A. leucosphyrus* by WHO experts in Sarawak and against *A. punctulatus* in a Dutch project in New Guinea. Progress reports will be presented at the conference and it is hoped that the discussions there may produce an agreement as to the most effective and economical methods to be applied in the control of rural malaria in areas where these vectors are responsible for the presence of the disease.

The second topic which is to be considered is national malaria-control programmes and their possible co-ordination. There are many countries in the two Regions which are carrying out nation wide programmes of malaria control—from Afghanistan to Burma, from India to Ceylon, from the Philippines to Indonesia and to Taiwan. The conference will consider the organizational aspects of these various campaigns, their needs as regards trained personnel and practical ways of obtaining more co-ordination in the operations within the countries and between countries and even between Regions. Such co-ordination might make possible reaching the end point of malaria transmission and eventually interruption of residual spraying operations. The necessary safeguards against a return of malaria transmission once this has been achieved might be outlined by the conference participants.

WHO is inviting experts from most of the countries of the two Regions to attend the conference and

it is hoped that other experts will be sent by their respective governments. The conference participants will not in any case be government delegates. Various international and bilateral agencies have also been invited to send observers.

New Studies on the Sorption of Insecticides

One of the most harassing problems for the organization of malaria control in areas where rural houses are made of mud is the adsorption of the insecticides by the mud itself. It has been found that certain types of mud after they have been sprayed with some insecticide formulations which allow the deposit of the insecticidal solid particles on the surface presently adsorb the insecticides into the depth of the wall. If this penetration of the insecticide (such as DDT or dieldrin) into the wall takes place the insecticide having disappeared from the surface where insects might pick it up becomes inactive. It would therefore be extremely important in any programme of malaria control to know what is the sorptive capacity of the mud locally employed for building houses.

WHO has been able to obtain the collaboration of a number of institutes in making tests according to a uniform technique developed by the Organization with the help of several experts of samples of mud sent by WHO field teams. The relevant institutes are the following: Communicable Disease Center, Savannah, Georgia, USA; Istituto Superiore di Sanità, Rome; Geigy, Basle; Malaria Institute of India, Delhi; Serviço Nacional de Malaria, Rio de Janeiro; Institut Pasteur, Paris; and the División de Malariología, Maracay, Venezuela. Results on samples submitted thus far will soon be available.

Development of Resistance of Anophelines to Insecticides

At its last session the Expert Committee on Malaria¹ expressed some anxiety concerning the develop-

¹ *Wld Hlth Org. Techn. Rep. Ser.* 1954, 80. see also *Chron. Wld Hlth Org.* 1954, 8, 198.

ment of resistance of a few species of anophelines to DDT which had been described in several places. Although at the time this resistance did not appear to be of such a degree as to interfere with malaria control it has since been found that it does, in fact, interfere with control (e.g. in Greece and in Java). The committee recommended that studies should be made of the susceptibility and of the variations in susceptibility of anopheline vectors to insecticides. WHO was able to secure the co-operation of the London School of Hygiene and Tropical Medicine and of the Istituto Superiore di Sanità in Rome as reference laboratories for such studies. At the same time so that entomologists in the field might carry out preliminary tests on the susceptibility of the local vector species standard testing outfits were prepared and sent to WHO teams. These outfits contain the materials and instructions necessary for performing the technique originally described by Busvine & Nash and reproduced and recommended by the Expert Committee on Malaria in its fifth report.*

Burma Malaria Control Team Moves to New Sector

The WHO demonstration team which has been working in Burma since 1951 has moved from the Lashio area to new headquarters at Maymyo near Mandalay. There the team will continue to aid the Government of Burma in its five year country wide malaria-control programme.

The project in the Lashio area has been successful. Spore-rates in young children have shown a considerable decrease in the incidence of malaria. More than 100 000 persons have been protected by DDT spraying. More manpower has become available because of fewer man hours lost to malaria, and this has meant increased agricultural and industrial production and medical and auxiliary personnel have been trained. In addition, the team's work has done much to promote health education and improvements in environmental sanitation.

Progress in Malaria Control in Indonesia

Tjidjap is the headquarters of a demonstration team which has been operating in Indonesia since September 1951. In 1952 and 1953 about 163 000 rooms were sprayed. As in other demonstrations,

attention in the Indonesian project is focused on bionomic studies of the vector DDT spraying, and training of personnel. Great attention is given to alleged changes in the behaviour of the local malaria vector *A. sundaleus* which might jeopardize the success of DDT operations. The public health engineer in this project has also aided other health projects giving advice on a water-supply improvement scheme for the cities of Telukbetung and Tandjungkaran in South Sumatra.

Nigeria Launches Malaria-Control Programme

A malaria-control project which, in its initial phase will cover 600 square miles (1 500 km²) and protect a population of 120 000 persons has been undertaken in Gwandu Emirate Northern Nigeria. With the help of UNICEF the Colonial Insecticides Research Committee, and WHO the Government of the Northern Provinces will attempt to eliminate malaria which kills more than 50 000 infants and children in Nigeria every year. Causes much loss of man hours of work and thus of the food which might be produced, and in general impedes progress and development of the country.

DDT BHC and dieldrin will be tried in spraying operations during the first year to determine which of them is the most suitable and easiest to apply. A modern mobile laboratory will be used by team members to cover the area and study the results of the control measures.

Philippine Malaria Control Project in Government Hands

The Government of the Philippines aided by the Foreign Operations Administration of the USA, has taken over full responsibility for a malaria-control project in which WHO has assisted for two years. During this period pilot operations were carried out in Mindoro with DDT and, in Northern Luzon with dieldrin. The efficacy of DDT-spraying as a malaria-control measure in Mindoro has been proved although the susceptibility to this insecticide of the malaria vector peculiar to the Philippines was in question. In addition field trials of dieldrin were made. More than 5 000 houses were sprayed, and protection was afforded to a population of nearly 25 000. The results of these field trials are expected to be of value to other countries as well as to the Philippines.

Sanitation Improvement Programme in India

A nation wide scheme to improve environmental sanitation has been undertaken by the Government of India. This large scale programme which will be concentrated particularly on the problem of water supply has been organized on the basis of a five year plan. The central Government is allocating funds to State governments which are to attempt to match the allocations. For rural schemes grants will cover up to 50% of the cost for urban schemes assistance will be given in the form of loans to State governments repayable in 30 years.

The national programme includes (1) the establishment of intensive village water supply and sanitation construction projects (2) improvements in municipal water supply and sanitation (3) planned division of responsibilities between the Ministry of Health, the State ministries of health, villages and bilateral or international agencies such as WHO (4) a concentrated training programme and (5) the application of suitable standards of performance. Priorities are being assigned to determine where projects are first to be undertaken.

The need for sanitary improvements in India is apparent. It is estimated that there are more than two million deaths and fifty million cases of illness each year from cholera, dysentery and diarrhoea and fevers (excluding malaria) that might be prevented by proper sanitation. A report by the Environmental Hygiene Committee of India in 1949 indicated that water supply in villages was a most urgent problem, the wells being poorly constructed and the water nearly always contaminated. It also stated that less than 5% of the village homes had any kind of latrine and that the soil was polluted in many places.

The five year programme to improve environmental sanitation in India through its organization and its integration with general efforts to promote health provides a framework into which may be fitted the efforts and contributions of local groups and organizations, State projects and the contributions in funds, materials, personnel and other resources available from bilateral or international sources.

Useful Techniques for Rearing Insects

Entomologists might find valuable the techniques for rearing and handling body lice, oriental rat fleas and cat fleas which are described by two entomologists from the United States Department of Agriculture.¹ The methods outlined are aimed to

produce large numbers of insects of uniform age and vitality with a minimum of handling. Particularly useful to the field investigator would be the information on collecting and shipping body lice.

BCG Assessment Teams

Two BCG assessment teams have been formed, one in the South East Asia Region and the other in the Western Pacific Region. A third team is expected to begin operations in the Eastern Mediterranean Region in the last quarter of this year.

These teams represent a joint undertaking of the Tuberculosis Section at WHO headquarters, the Regional Offices, UNICEF and the Tuberculosis Research Office. They have two functions. In countries where a BCG vaccination programme is contemplated but not yet begun, they collect information on the prevalence of reactors to tuberculin in sample localities to provide a basis for judging whether or not a mass campaign should be started and if so, what age groups should be included and where the work should be concentrated. They determine the pattern of naturally acquired tuberculin sensitivity in order to provide the basis for tuberculin testing procedures for the contemplated mass campaign. They ascertain how the population reacts to BCG vaccination (measured in terms of degree of allergy and lesions produced) and finally they make preliminary trials of the vaccine to be used in the mass campaigns of that country. It is expected that the key national personnel responsible for carrying out mass campaigns may get training and experience by working with the assessment teams. In many countries, the BCG campaigns have been under way for a long time. There the function of the team is to determine on a sample basis what has been achieved and to provide information to correct or improve when necessary the techniques and procedures used.

Administratively the assessment teams operate under the Regional Offices, financially UNICEF bears their expenses and technically they work under the direction of the Tuberculosis Research Office.

Syphilis in Ceylon

In 1951 at the request of the Government a venereal disease-control project was begun in Ceylon. As a preliminary step, serological testing of various population groups was undertaken to determine the actual prevalence of syphilis in the country. A report on the serological findings by S. M. Laird, former Senior Adviser of the WHO demonstration team, has been published in the *British Journal of Venereal*

¹ Smith C. N. & Eddy G. W. (1954). Techniques for rearing and handling body lice, oriental rat fleas and cat fleas. In *Bull. Wild Health Org.* 10: 127.

Diseases ⁴ This report reveals that positive results were given by about 4% of the 6 067 pregnant women and of the 2 788 men in different occupational groups who were tested. The patients' histories and/or clinical examinations largely confirmed the serological results. It was concluded that the serological findings were reliable and provided a satisfactory minimum estimate of the prevalence of syphilis in the population groups examined.

WHO and FAO Assist Burma in Improving Nutrition

Faced by the problem of serious and widespread malnutrition among a population with a general food surplus, the Government of the Union of Burma recently requested aid from the United Nations Food and Agriculture Organization (FAO) and WHO in the development of a national nutrition service and of a large scale educational programme in nutrition.

In early August WHO sent Dr Simon Postmus, Senior Medical Officer at the Central Institute for Nutrition Research in Utrecht (Netherlands) to work as adviser to the Burmese Government. Dr Postmus will be joined by Miss Wilhelmina Pranger, home economist who has been assigned to the project by FAO. One of the important primary objects of the new project will be to carry out studies of various population groups to determine which kinds of nutritional deficiencies are most prevalent and which locally obtainable foodstuffs could be used advantageously by the people in securing a more healthful diet.

Dr Postmus will act as technical adviser to the Government for two years, during which time Burmese personnel will be trained so that the work may be continued and extended once the international staff has been withdrawn. The establishment of a nutrition laboratory in Rangoon is also anticipated as part of the project.

Public Health Diploma of University of Malaya Recognized

The General Medical Council of the United Kingdom of Great Britain and Northern Ireland has recognized the Diploma in Public Health of the University of Malaya as a registrable qualification under the Medical Act of 1950. This means that the possessor of the diploma is qualified for a public health appointment anywhere within the British Commonwealth.

Recognition of this diploma is of interest to WHO because the Organization has aided the University of Malaya in developing its public health course. The services of lecturers in health education, medical statistics, applied physiology and applied nutrition have been provided by WHO. In addition, the Organization has granted fellowships to strengthen the faculty of the University and has supplied teaching equipment.

The development of the public health course and its official recognition give Malaya and possibly nearby countries an opportunity to recruit medical officers of health from among their own people—doctors who have been trained in their own region.

Projects in Ethiopia

Dr J. W. Tesch, Chief of the Communicable Disease Control Section of the City of Rotterdam, has been granted leave from his post to serve a second year as WHO Public Health Adviser to the Government of Ethiopia. Dr Tesch will thus be able to continue to advise on strengthening the health services of the country and to co-ordinate WHO activities there. These activities are extensive, ranging from venereal-disease control and BCG vaccination to a project for training auxiliary health workers. The latter is particularly important, a programme which is also being aided by the Foreign Operations Administration of the USA and by UNICEF. It has been started to train sanitarians, public health nurses and various types of auxiliary personnel to help meet the requirements of Ethiopia's largely rural population until enough Ethiopian doctors have been graduated to take care of minimum health needs.

Poliomyelitis Incidence Lower

The *Weekly Epidemiological Record* ⁵ reports that this year there was a lag in the seasonal rise usually apparent in May and June in the incidence of poliomyelitis in most countries of Western Europe and in Canada. In the USA, however, the seasonal curve was similar to that recorded in 1953 and the number of cases provisionally reported was as high.

Shigella Centres

Two International Shigella Centres—one in Atlanta, Georgia, USA, and the other in London, England—are now in operation under formal arrangements.

made earlier this year between WHO on the one hand and the United Kingdom Medical Research Council and the US Public Health Service on the other

Protection against Roentgen and Isotopic Radiations

In a circular letter sent to Member Governments the Director General has requested that they forward to him copies of any laws or regulations they may have in force concerning the protection of technical workers against Roentgen and isotopic radiations specifying whether or not these regulations cover the general public as well. This information is sought as a first step in implementing a resolution of the Executive Board⁶ to the effect that this subject be studied in consultation with the international and non governmental organizations concerned and with Member States and that a report be submitted to a future session of the Board. The resolution arose from a suggestion of the Government of Austria that WHO consider preparing international regulations for the protection of workers and the general public against Roentgen and isotopic radiations the points to be covered by such regulations to include (a) permissible dose for external radiation (b) permissible dose for internal radiation (c) protection against X rays generated at potentials up to two million volts (d) protection against X rays above two million volts and beta and gamma rays (e) protection against heavy particles including neutrons and protons (f) disposal of radio active waste and (g) handling of radio-isotopes

ECOSOC Discusses WHO Report

The Economic and Social Council of the United Nations at its eighteenth session (July 1954) discussed and noted with appreciation the annual report on the work of WHO

Mr B Toussaint (France) considered that the regionalization of WHO activities had been fully justified. Mr V Montoya (Venezuela) also approved regionalization and expressed his satisfaction with the operation of the Regional Office for the Americas in Washington. He said however that the geographical distribution of the positions in WHO left something to be desired. A similar opinion was voiced by Mr J Leroy (Belgium) who stressed the necessity for an equitable geographical distribution in recruiting the Organization's experts. Similar views with regard to regionalization and the geogra-

phical distribution of positions were also expressed by Mr M R Pico (Argentina) and Mr S S Bajpai (India)

Mr H Hafiz Ur Rehman (Pakistan) regretted that certain sources of Technical Assistance had had to be discontinued by the Organization for lack of credits. Mr P Hotchkis (USA) also deplored the reductions made in certain activities of the Organization and expressed the hope that the other countries would accord WHO greater financial support. Sir Douglas Copland (Australia) spoke of the need to provide for a stabilization of the budget of the Organization. Mr Toussaint noted that the budget of WHO had risen from five million dollars to nine and a half million for 1955 without including the supplementary aid furnished by UNICEF and foresaw a period of stabilization.

Mr Hafiz Ur Rehman emphasized the importance of WHO's long term programmes. In the under developed countries he said there was a definite relation between the unfortunate situation of public health and the low standards of living. Mr Hotchkis considered that the campaign against infectious diseases represented one of the most important of WHO's activities.

Mr Leroy thought that with the increase in the number of Members of WHO from 48 to 81 an extension of its Executive Board from 18 to 24 should be reconsidered. Mr Hotchkis noted that progress had been made in the direction of the co-ordination of the efforts of WHO and of other specialized agencies. He considered that further stimulation of this co ordination was a responsibility of the Council. Mr C L Hsia (China) felt that WHO had not made the order of priority accorded to its programmes sufficiently clear in its report. Mr J Briley (Yugoslavia) referred to the heavy task which awaited the Organization in the coming years.

Further comments most of them expressing general approbation of WHO's work were made by Mr K Salvesen (Norway), Mr A H Abdel Ghani (Egypt), Sir Alec Randall (United Kingdom of Great Britain and Northern Ireland), Mr E Nuñez Portuondo (Cuba) and Mr R Vasconez (Ecuador).

PASB Statistical Report

The Pan American Sanitary Bureau WHO Regional Office for the Americas has recently published *Basic procedures for the reporting of communicable diseases*⁷ a report containing the

⁷ Pan American Sanitary Bureau (1954) *Basic procedures for the reporting of communicable diseases*. Washington, D.C. (Scientific Publications No. 9)

⁶ EB13 R. 54 in *Off Rec Wld Hlth Org* 1954 52 22

recommendations of participants in a seminar on the reporting of communicable diseases which was held in November-December 1953 in Santiago, Chile. This seminar brought together epidemiologists and statisticians of the national health services of the countries of South America "to develop procedures

and to prepare recommendations for local, national and international reporting of communicable diseases". The report on the recommendations that resulted fills the need for an outline of such basic procedures and can be used "as a reference document by health officials desiring to improve their systems".

Maternal Care and Mental Health

The second edition of Dr. John Bowlby's monograph *Maternal care and mental health* (No. 2 in the *World Health Organization Monograph Series*) has recently appeared in French (*Soins maternels et santé mentale*). This makes a total of 19 000 copies now published in the two languages.

Malaria Terminology - French

A glossary of French terms in malariaology has recently been published by WHO in the Monograph Series. The work of a drafting committee appointed by the Organization and consisting of M. Vaucel, E. Roubaud, and H. Galliard, this monograph *Terminologie du paludisme*¹ is the French equivalent of *Malaria terminology*² by Sir Gordon Covell, P. F. Russell, and N. H. Swellengrebel, which was published in 1953. The French glossary is not, however, a translation of the English, though the information and format of the former work have been adapted to the French monograph.

Vaucel, M., Roubaud, E. & Galliard, H. (1954) *Terminologie du Paludisme*. Geneva: (World Health Organization Monograph Series No. 25) 95 pages. Price 10 \$1.50 or Sw. f. 6.—

Covell, Sir Gordon, Russell, P. F. & Swellengrebel, N. H. (1953) *Malaria terminology*. Geneva: (World Health Organization Monograph Series No. 13).

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SCHEDULE OF MEETINGS

1 6 October	Conference on African Onchocerciasis Léopoldville
4 6 October	PASO Executive Committee twenty third meeting Santiago
7 22 October	Regional Committee for the Americas sixth session Santiago
	PASO Fourteenth Pan American Sanitary Conference Santiago
11 16 October	Expert Committee on Drugs Liable to Produce Addiction fifth session Geneva
17 30 October	Public Health Nurses Seminar Istanbul
18 23 October	Expert Committee on Biological Standardization eighth session Geneva
20 October 1 November	Inter regional Meeting for the Co-ordination of Research on Sylvatic Plague to be attended by Governments of Iran Iraq Syria, and Turkey Teheran
22 October	PASO Executive Committee twenty fourth meeting Santiago
25 October 10 November	Committee on International Quarantine second session Geneva
26 October 2 November	Joint FAO/WHO Expert Committee on Nutrition fourth session Geneva
1 6 November	Expert Committee on Mental Health fourth session Geneva
15 27 November	Malaria Conference for the Western Pacific and South East Asia Regions Talpeh

The mention of manufacturers products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature which are not mentioned

INFLUENZA VACCINES

In Europe there are only a few countries with laboratories which produce influenza vaccines so that other countries needing vaccine must import it. No national health authority has yet adopted minimum requirements for the composition, potency or safety of such vaccines. While some producing laboratories consult the national WHO influenza centre regarding the selection of strains for incorporation in the vaccines, others do not. The result is that many commercially available vaccines contain different strains of virus, including some which have not been detected in epidemics for several years and which are known to give no protection against current viruses. Laboratory tests on certain commercially available vaccines have also suggested that not all of them are likely to give reasonable protection.

In view of this situation and of the fact that many of the vaccines produced are for exportation, WHO arranged for an international consultation on the composition and methods of testing of influenza vaccines. It was felt that the stage had not yet been reached at which recommendations of world-wide validity could be made, but that interim recommendations could be made for Europe. Accordingly, an informal meeting of a group of European influenza experts¹ was arranged at the World Influenza Centre in London. An invitation was extended to the WHO Regional Office for the Americas to arrange for an expert from the Americas to attend also, but this unfortunately proved not to be possible.

The recommendations which follow resulted from this meeting.

CRITERIA FOR SELECTION OF STRAINS

Influenza A

A vaccine should contain two recent strains of A virus representing antigenic variants which have been responsible for significant epidemics during recent years. When a new antigenic variant appears which has been responsible for a significant epidemic and thus has shown its ability to spread through a partially immune population, a strain of this variant should be selected to replace the earlier of the two strains in current use. (This will help commercial firms who would have to discard only half their original stock provided this is stored in bulk.)

The inclusion of PR8 or other early strains is not recommended since field trials have shown this strain to be devoid of protective power against current A viruses.

Influenza B

It is recommended that the vaccine should contain the Lee strain of influenza B virus and a recently isolated strain which has been responsible for a significant epidemic.

Polyvalent vaccines

Experience has shown that vaccines containing both viruses A and B have been effective in the field. However, in view of the varying importance of influenza B in different countries, a decision to include B virus along with the A viruses must be left to the authorities concerned.

¹The meeting was attended by Dr C. H. Andrews (United Kingdom), Dr J. Archetti (Italy), Dr A. Isaacs (United Kingdom), Dr P. O. Mønsen (Denmark), Professor J. Mulder (Netherlands), Brigadier A. E. Richmond (United Kingdom), Professor C. H. S. Harris (United Kingdom), and Dr A. M. P. M. van Boven (WHO). Also present was S. Macfarlane, B.Sc., F.A.S. (Australia) who was in London at the time and was invited to join the group.

In addition to its antigenic characters, the strain of virus to be selected should have certain properties. It should be a potent antigen, preferably tested by antigenic potency tests in man or by comparable laboratory tests (see below). There is good evidence that adaptation to mice increases the antigenicity for mice and some evidence to suggest that the same holds for trials in human beings. It may therefore be desirable that the strain should be adapted to mice if a satisfactory titre in eggs can be attained after adaptation. It should be able to produce a high titre on growth in the allantoic cavity of fertile hen eggs, even after adaptation to mice. Finally, there should be no tendency to undue deterioration on prolonged storage at 2°C.

STRAINS RECOMMENDED FOR CURRENT PRODUCTION

The following strains are recommended for current production of influenza vaccines:

- (1) a 1951 Liverpool strain such as A/England 1/51 mouse adapted
- (2) a more recent A strain such as A/Missouri 303/52 (Scandinavian) mouse adapted,
- (3) B Lee,
- (4) a recent B strain such as B/Denmark 2/53 mouse adapted

PROCEDURE FOR FUTURE REVIEW OF RECOMMENDED STRAINS

The above recommendations are to remain unchanged until a new variant appears which is thought to be suitable for replacing one of the earlier strains. The new strain will be studied by the World Influenza Centre in consultation with interested workers. The World Influenza Centre will further consult with WHO influenza centres undertaking antigenic analysis and will report to the Organization.

TESTING OF VACCINES

Tests on a number of commercially available vaccines have shown that some of them lack significant antigenicity. It is clearly most important that adequate potency should be ensured but unfortunately at the present time current laboratory potency tests have not proved satisfactory. Pending the development of satisfactory tests a number of interim recommendations are made.

It is recommended provisionally that once a strain has been shown to be a good antigen by potency tests in human beings or experimental animals then the haemagglutination titres of vaccines prepared from this strain may be taken as an index of their antigenicity. The haemagglutination test should be carried out at a stage as near the final product as possible. In view of possible modifications imposed by passage it is desirable to avoid repeated passages as far as possible by preparing large batches of seed virus.

Since different laboratories titrate haemagglutinins by different methods it is proposed to supply reference preparations for each of the four recommended strains for reference in haemagglutinin titrations.² The reference preparations will be adjusted to a titre which should be readily attained in practice. The haemagglutinin titre of the harvested allantoic fluids used for vaccine preparation should be at least half that of the reference supplied.

In order to reduce the risk of febrile reactions it is undesirable that the viruses should be unduly concentrated in the vaccine. With some preparations more than three fold concentration of allantoic fluid has been found to be undesirable unless the vaccine is

² The four strains of virus and the appropriate reference preparations are now available and may be obtained from the World Influenza Centre, National Institute for Medical Research, The Ridgeway, Mill Hill, London, N.W. 7.

adsorbed on aluminium phosphate or similar adsorbant

Laboratory tests of antigenicity in mice are under development but no individual test can be recommended at the present time. It is hoped eventually to relate the results of such tests to antigenicity in man.

Tests of the antigenicity of vaccines in human beings are most desirable but present a number of obvious practical difficulties. Wherever possible it should be shown that a reasonable anti haemagglutinin response in man is obtained.

TERMINOLOGY FOR DESIGNATION OF STRAINS

Further to the recommendations of the first report of the WHO Expert Committee on Influenza² it is considered that among recent A strains there has been sufficient antigenic divergence from strains similar to FM1 to justify the creation of a new group. It is recommended that WHO consult members of the Expert Advisory Panel on Influenza as to whether they are in agreement with this view and, if so, on the selection of a prototype strain. The 1951 Liverpool strains are considered to fall within the FM1 (1947) group. It is recommended that the term "A prime" should be discontinued.

In epidemiological reports it is recommended that the results of serological tests should be recorded as indicating infection

with virus A or B only without further qualification.

FURTHER RESEARCH

Research on the incidence and significance of influenza in tropical regions is needed since this may shed further light on the epidemiology of the disease in particular on the relationship between epidemics in the Northern and Southern hemispheres.

Another suggested line of study is the possibility through recently discovered recombination techniques of producing strains of influenza virus having some combination of the desirable qualities for use in vaccines.

Further research is required on the correlation of the results of different tests of antigenic potency in man and in experimental animals with the protective effect as shown in field trials. In particular the reproducibility and significance of the following tests should be measured:

- (1) NIH mouse protection test measuring neutralizing antibody
- (2) tests of active immunity induced in mice
- (3) test of anti haemagglutinin production in mice
- (4) test of the antibody combining power of a strain of virus

There is at present no satisfactory toxicity test for influenza vaccines. Further research is needed on the relationship between pyrogenic and other toxic effect in experimental animals and in man.

WHO Monograph on Maternal Care Published in Swedish

Dr J. Bowlby's monograph *Maternal care and mental health* (World Health Organization Monograph Series No. 2) has recently been translated into Swedish and has been published under the title *Modern och barnets själsliga hälsa* by Natur och Kultur, Stockholm.

MEDICAL EDUCATION IN SOUTH-EAST ASIA

The severe shortage of physicians throughout South East Asia is one of the greatest obstacles to the countries health programmes. Measures such as importing doctors, redistributing those available, or training more lower grade medical personnel are only palliative, the ultimate solution can be given only by the medical schools.

In the past three years WHO has sent a considerable number of highly qualified teachers of medical subjects to various countries of South East Asia, either on a consultant basis or as members of teams whose mission was to exchange information with professional counterparts in the countries visited. From the reports of these teachers and from other documentation, the Organization has been able to draw up a study of medical education in the Region to survey the needs and to suggest means for meeting some of the more fundamental of them.

Medical manpower and medical schools

The number of medical schools in South-East Asia must be increased or the capacity of the existing ones must be augmented. Thus far, more attention has been paid to creating new schools (e.g. in Burma, Ceylon, India, Indonesia, and Thailand) than to increasing the capacity of existing ones. The crux of either solution is the provision of teaching staff.

Of all the resources that are needed to develop modern health services in general and medical education in particular academic teaching staffs are among the most difficult to provide. Most of the other essentials of a medical school—buildings, instruments, books, teaching aids etc.—can be more easily supplied, and fairly quickly if need be, because they are merely dependent

upon funds, which can be made available from some source or another. Teachers however, cannot be produced in a hurry. It takes approximately fifteen to twenty years to train a senior teacher of the required standing and time is not the only factor in developing him into the leader he should be in his field. Governments should therefore realize that the establishment of new schools, five, ten, or fifteen years hence is dependent upon training teachers now.

The problem of providing teaching staff for medical schools is in large part, an economic one. The financial inducements of government posts or private practice far exceed those offered by teaching so that the graduating physician is not often interested in continuing his training in order to become a professor in a medical school. The most crucial shortage is in teachers of the basic medical sciences. Here again the financial discrepancy is apparent: teaching pre-clinical subjects has even less attraction than teaching clinical ones since private practice may supplement the income of the clinical professor.

The need for medical manpower in all the countries of South East Asia is so great that the establishment of national planning bodies—medical manpower commissions—would be warranted. Such commissions, functioning under highest government authority might be able to correct some of the prevalent unsatisfactory distribution of new graduates of medical schools.

The role of the medical school

There are three traditional or classic functions of a medical school: undergraduate training, service to the community and research. These functions may and should however differ according to the special needs

of a country or a region. For example, in less developed countries physicians are called upon to assume civic responsibilities and should be trained for this; they are also required to have a better public health background than the average practitioner in more developed countries, since specialists in this domain are extremely rare.

The medical schools of South East Asia are more or less fulfilling the first two of the above functions. It is in research that they are weakest, and it is for this reason that many of the schools have a more vocational than scientific or academic character. Failure to assume responsibility for research stems in many countries from the historical evolution of the medical schools. When the countries were under colonial rule, the mother country largely relied on her own research resources and provided her own personnel for such research institutions as were established in the colonies; now the new independent countries have to rely increasingly on their own national scientific resources. The medical schools in such countries will gradually have to rise to the higher level of teaching and service for which research is a prerequisite, but this will require a great deal of time, planning, and effort.

Related to the problem of carrying out research is that of developing interest in the basic medical sciences. Generally speaking, it is easier to improve the situation with regard to the clinical than the pre-clinical sciences. There is a great need in most of the countries of South East Asia to stimulate interest in and appreciation of the basic sciences so as to create a desire to experiment and investigate. Experimental and investigative work calls for a certain mental attitude or intellectual "climate," and it is this that must be developed if medical education is to have a solid foundation.

Another function of the medical school is to train its own future teaching staff. Teaching staffs eventually have to become

self-perpetuating in the sense that successors to the incumbents are trained by the school in the normal course of its routine functions. It may be said that a school has reached its full maturity only if and when it is capable of developing its own teachers, though this in no way implies that such training may not be advantageously supplemented by study in other schools or countries. Very few, if any, of the medical schools of the South East Asia Region have reached this stage yet, and for many years to come they will have to rely more or less on foreign training facilities. However, the better and more scientific the training in their own schools becomes, the more will the graduates benefit from study abroad.

Orientation of the medical school

Medical education has to be oriented in each country to the specific needs and conditions of that country in order to produce a type of physician suited for the tasks at hand. The trend in modern medical education towards reorientation of teaching from the predominantly individual and curative approach to a more community-minded and preventive one becomes imperative in the less-developed countries where environmental conditions and educational standards are so poor that individual curative care has little chance of improving the overall health situation. The general practitioner in the less developed countries often has to assume many of the responsibilities of the public health officer as well as carry on his clinical curative practice.

At present, most of the medical schools in South East Asia follow a certain foreign pattern of education, often an antiquated version of it. It will take much study, time, and courage to make the changes necessary to adapt the system to the specific needs of their own countries, but this reorientation is essential. Guidance and assistance from

outside agencies, such as WHO, can be most valuable, but such aid must be directed towards long term objectives and immediate efforts must be fitted into plans for the eventual reorientation of the medical education system

Curriculum

In a region such as South East Asia where the need for physicians is so great, it is necessary to devise a curriculum which allows the educational goal to be satisfactorily reached in the shortest possible time. For instance, a seven year curriculum is too long for a country with a physician population ratio of 1:60,000. The length of the medical curriculum should be the outcome of an acceptable compromise between a country's medical manpower needs and the time required to teach successfully all that is deemed essential.

In teaching the basic medical sciences the almost universal trend is to give more attention to the functional understanding of health and disease, placing increasing emphasis on physiology, biochemistry, and experimental pharmacology rather than on anatomy. Schools in South East Asia still tend, however, to adhere to the morphological approach, and teaching in biochemistry and experimental pharmacology is inadequate in most places. Some revision of the curriculum will be required as certain specialities develop in the Region: for example the science of biochemistry is still in its infancy in many schools but it will gradually assert itself as a discipline separate from physiology as it has in most of the advanced countries.

The entire curriculum of the medical schools of South East Asia, particularly as regards clinical subjects, should be slanted towards the practical. The ideal means of achieving this emphasis on the practical would be small group, bed side teaching but shortages of staff are an obstacle to such

teaching at present. More effort should in any case, be made to bring the student into touch with patients as early and as much as proves feasible.

The curriculum must also be slanted towards the preventive aspects of medicine though this may be difficult to accomplish since it requires that the professors become more 'prevention minded'. Creation of a Chair in Preventive Medicine may in South East Asia as elsewhere, be the best means of giving this subject the needed emphasis in the curriculum. Training in public health becomes essential in the Region, as has been previously implied. Health conditions demand that curative medicine go hand in hand with preventive and public health measures. This means, in effect that the undergraduate curriculum of medical schools in South East Asia must include material which is often reserved for post graduate public health training in many of the more advanced countries.

The bases of the general practitioner's clinical training are the four specialties of internal medicine, surgery, obstetrics and gynaecology and paediatrics. Of these four, only paediatrics is still struggling in South East Asia to gain the proper recognition and be taught as adequately as the other three subjects. This shortcoming should be corrected wherever it exists. The details of the curriculum in all of the four subjects should be determined by the particular health problems of the Region. For example in internal medicine greater emphasis would necessarily be placed on the teaching of infectious and communicable diseases, parasitic infestations and nutritional deficiencies than would be the case in countries where many of the conditions prevalent in South East Asia would be clinical rarities.

Teaching

Teaching methods in the medical schools of South East Asia must like the curriculum

be adapted to the particular needs of the setting in which they are employed. One of the questions to be considered—a question not unique to schools in this Region—is the system of examinations which unduly dominates both the teachers and the students efforts. The professors seem to teach so as to prepare their students for their examinations and the students are apt to concentrate on learning what they are likely to be asked. Thus the passing of examinations tends to be mistaken for the real objective which is the acquisition by the student of all the knowledge and skill needed for adequately practicing his future profession. The high examination “mortality rate” in many of the schools of the Region indicates that both the teaching and the present system of examinations should be subjected to some revision.

Not enough deliberate effort is made to teach the students critical scientific reasoning and to encourage independent thought. The student should learn to apply general principles to particular cases rather than try to memorize all the particular cases he may encounter. For instance the functional (pathological physiological) mechanism of disease should be taught instead of disease entities as such. The student will thereby learn how to deal intelligently with any situation with which he may be confronted.

The solution of these problems rests almost entirely with the medical educational institutions concerned especially with the

teaching staffs. Mental reorientation is required and this will probably be attained only gradually and by consistent and determined effort.

General conclusions

The WHO study suggests that the attention of governments be drawn to the desirability of creating an authoritative national body in each country to prepare a reform of medical education. As has been pointed out the most urgent task is to increase the number of qualified teachers particularly in the basic sciences. Also necessary is an increase in the budgets and resources of medical schools. While assistance from WHO and other outside agencies may provide impetus and inspiration in meeting many of these needs improvement of medical education in South East Asia depends in the final analysis on the effective action of the governments themselves.

Although based on the situation in South East Asia, the findings of this study could be applicable to countries of other regions as well and on many points to medical education everywhere. For this reason the study is of general interest to those concerned with what is an urgent problem in most parts of the world—how to train enough doctors so that at least minimum medical care may be provided for all of the population.

Statistical Reports

Two numbers of the *Epidemiological and Vital Statistics Report* have recently been issued. The first¹ contains data on cases of and deaths from smallpox, scarlet fever and erysipelas and statistics on deaths from scarlet fever since the beginning of the century. The second² is devoted to general vital statistics (natality, general mortality and natural increase) in selected countries from the beginning of the century and to tables on cases of and deaths from yellow fever relapsus, fever poliomyelitis and influenza.

Epidemiol. Ital. St. Ist. R. P. 1954 7 31
Epid. m. Ital. St. Ist. R. P. 1954 7 303

NURSING EDUCATION IN TAIWAN*

Taiwan is an island located between the Philippines on the south and Japan on the northeast with the China Sea on the west and the Pacific Ocean on the east. Taiwan means 'terraced bay', which is descriptive of the beautifully terraced fields of rice and tea. The island is often referred to as Formosa which means beautiful and is a name given to the island by Portuguese sailors in 1544.

The Chinese migration to Taiwan began in 1388. The Dutch came in 1624. The Spanish landed in 1626 and occupied the northern section for a short time; they were driven out by the Dutch 15 years later. The island was recovered by the Chinese in 1661. Following the Sino-Japanese War, Taiwan was ceded to Japan in 1895. The Japanese established industries, built railroads, laid telephone and telegraph lines, improved harbours, developed agriculture, and established schools. Taiwan was returned to China in 1945 and became a province of the Chinese Republic.

Nursing in Taiwan was for many years an unskilled type of service. Nurses usually did the work of maids and clerks. Patients in hospitals were given nursing care by members of the family. Nurses and midwives received an apprenticeship form of training that did not include instruction or supervision by nurses. The only two professionally educated nurses in Taiwan were two young women who had attended St. Luke's School of Nursing in Tokyo.

There are now four schools of nursing in Taiwan: the National Defence Medical College School of Nursing, the dean of which is a member of the WHO Nursing Panel; the Provincial School of Nursing and Midwifery, which gives a four-year course that

includes public health nursing and midwifery; a new school in Tainan in the southern part of the island; and the School of Nursing at the National Taiwan University Hospital, which was opened in May 1950. At this last school 43 students completed the three-year training course in May 1953, 50 students are enrolled annually, and the present enrolment is 147.

Since Taiwan has only recently developed schools of nursing under the direction of nurses, one of the major problems is the shortage of nurse teachers. The Government requested assistance from WHO in providing teachers for the National Taiwan University Hospital School of Nursing over a five-year period.

The first of a team of five nurse educators assigned by WHO arrived in Taiwan in May 1952. A year later the team was complete, with one teacher in general nursing, one in obstetrics and paediatric nursing, one in nursing arts, and two in medical and surgical nursing. Well-qualified local counterparts were assigned to work with the international team members. Together they formed a nursing education committee that has been the focus of group planning.

This committee tackled the problem of the acute shortage of teaching materials for Chinese student nurses. Nursing textbooks that have been translated into Chinese are mostly out of date. The Chinese Nurses Association, with the help of the American Board for Medical Aid to China, is working on translations of current articles in nursing journals, but there is very little material to meet the individual needs of student nurses. The nursing education committee undertook the preparation of student manuals in subjects in which they were most needed—nursing arts, obstetrics, paediatrics, and

*This article was written by Miss Elizabeth Hill, Nursing Adviser, WHO Regional Office for the Western Pacific.

medical and surgical nursing. The preparation of these manuals evolved out of discussions between the WHO nurses, their local counterparts and the medical teaching staff. Lectures were written in English by the WHO nurses and translated into Chinese by their local counterparts. The Chinese lectures were then mimeographed and given to each student. The principles and procedures set forth in the manuals are part of the students' actual experience. This material has been revised as it has been used for two years. Each study unit includes references to books that are in the school library. At the present time three manuals are ready for the Chinese editor and the artist, who will illustrate the contents with line drawings. The manuals will be in loose leaf form so that they can be easily revised. If the budget permits one copy of each manual will be given to each student in the four schools of nursing. It has been requested that the manuals be made available for purchase by graduate nurses and it is anticipated that this can be arranged. A five year supply will be printed. As experience is gained in the preparation of teaching material in Taiwan the nursing education committee expects to enlarge the students' library by producing manuals on other subjects. Textbooks from other countries are necessary for reference but the main body of the material that is most useful for student teaching must be written in the country where it is used.

One of the objectives of the WHO assisted nursing education project is to prepare local nurses for teaching and administration. This is being accomplished through the participation of local personnel with WHO nurses in the teaching programme and through fellowship study abroad. Three nurses are on study leave at present—one in nursing arts, one in obstetrics and one in surgical nursing. Three nurses have returned from study leave—one in nursing administration, another in nursing arts and a third in public

health nursing. Four nurses are going on study leave this year and others are scheduled to go next year. Nurses have been selected for fellowships in order to strengthen both nursing service and nursing education. Some of the fellowships have been granted by the Foreign Operations Administration (FOA) of the USA and others by WHO.

A special committee on nursing education was set up in 1953 to study the needs and make recommendations on the levels of nursing education that are needed in Taiwan. Among other suggestions was one that a collegiate school of nursing should be established to meet the need for nursing teachers, supervisors and administrators. It was decided that this collegiate school of nursing should be set up at the National Taiwan University. In preparation for this development the Director of the School of Nursing of the University was sent for study at Boston University in the USA. WHO is recruiting a nurse-educator who has had experience at the university level and FOA is assisting in the remodelling of buildings and by supplying equipment. The interest in this project shown by the University, the faculties of the nursing and medical schools and Government officials augurs well for its future.

When plans for WHO assistance were drawn up in 1951 it was intended that the international team should be available for aid in improving nursing education and nursing services throughout Taiwan although it would be assigned primarily to the National Taiwan University Hospital School of Nursing. Accordingly one member of the team has been helping with the new school of nursing at Tainan giving refresher courses for staff nurses and assistant nurses. This assistance is expected to be continued, with the WHO nurse serving with her local counterpart in the capacity of Educational Director. Local nurses have been granted fellowships by FOA so that they may obtain

additional preparation for teaching positions in this school. To help to improve nursing services, team members have given courses for directors of nursing services in some of the provincial hospitals. The Government is requesting WHO aid in planning refresher and postgraduate courses.

The WHO project will be completed when the collegiate school of nursing and postgraduate courses are functioning under the direction of a local faculty, and when Taiwan has facilities for the preparation of nurse teachers, supervisors, and educators.

USA NATIONAL CITIZENS COMMITTEE FOR WHO

National committees for WHO, the aim of which is to promote interest in the Organization and to obtain support for its activities, have been established in Austria, Canada, Finland, Japan, and the USA, and are in the process of being formed in France and the United Kingdom of Great Britain and Northern Ireland. The following article concerns one of these committees, that in the USA, which is holding its second annual meeting this month.

'Doctors and other public health workers know that health is not something you can hand over to people like food or money. Health—personal, national or international—must be worked for. Therefore it stands to reason that health, above all other subjects, needs the understanding and support of the peoples of every country. This statement by Dr. Frank G. Boudreau, who has been one of the leading figures in the establishment in the USA of the National Citizens Committee For The World Health Organization, expresses one of the main reasons for setting up such committees—namely, to aid understanding of the work of WHO and thereby to encourage public support of its activities.

The creation of national WHO committees was discussed and given official sanction by the Third World Health Assembly, in 1950. Even previous to that time a committee had been formed in Finland, but this particular national group was Government appointed and acted in a co-ordinating capacity between the country and WHO and other international organizations dealing with health problems. The type of committee envisaged by the Assembly was of a non-governmental

nature, though it was recognized that the pattern and functions of such committees would vary from one country to another.

The idea for the National Citizens Committee for WHO in the USA had its inception during the summer of 1950 when various public health leaders began to discuss the idea of a citizen group to make the work of WHO more familiar to the American people. The next step was consideration of the idea by the National Health Council, whose membership includes most of the national and voluntary health agencies in the USA. The Council in January 1951 set up a steering committee to study the formation of a national committee for WHO. Almost immediately the American Association For The United Nations, which has encouraged the formation of groups in support of the specialized agencies, joined with the National Health Council as a co-sponsor of the Committee. Growth and recognition came rapidly, and in May 1953 the Committee was incorporated as a separate entity with its own officers, board of directors, membership structure, and budget.

The National Citizens Committee for WHO is a voluntary, i.e. non-governmental citi-

zens organization which is supported by individual membership (in six classifications—active contributing sustaining supporting patron, sponsor—by amount of annual dues paid ranging from \$5 00 to \$1 000 00) and by organization membership (sponsoring organizations participating organizations associated groups and affiliated local committees—which vary with the programme and nature of the member organizations and the amount of the annual contributions made to the National Citizens Committee) Its prospectus reads in part

The purpose of the National Citizens Committee For The World Health Organization is to increase public understanding of the relation of public health to the general welfare in all parts of the world community and public appreciation of the importance of international health programs It will seek to enlist interest in, and support for the work of the World Health Organization

Recognizing that most people think of international relations in terms of political and military balance, and of the United Nations as an organization for debating such matters another basic objective of the Committee is to call attention to a part of the United Nations in which co-operative effort in the solution of international problems is proceeding with marked success—the World Health Organization. International health work is a field in which there need be no destructive competition and strife The supply of health is unlimited If our neighbor gains in health, we gain also

It is obvious that the U N will fail in creating peace unless the millions who live in misery in under developed countries can look forward to rising standards of living, which can only be achieved by comprehensive economic growth Public health, an area in which men of all races creeds and nationalities can learn easily to work together is the ideal spear head of a movement for international co-operation in economic development

What, exactly does the Committee do? When it was still in the steering-committee stage it sponsored jointly at the 79th Annual Meeting of the American Public Health Association in San Francisco in October 1951 a session of the latter on the subject of international health This meeting was addressed by Dr Brock Chisholm the

then Director General of the World Health Organization Dr F Soper Regional Director for the Americas Dr C Mani Regional Director for South East Asia, Dr H Hyde Member of the WHO Executive Board designated by the USA and Dr F G Boudreau Chairman of the Steering Committee National Citizens Committee for WHO It was at this gathering that Dr Boudreau announced the formal establishment of the Committee¹ Starting with a \$10 000 grant from the Milbank Memorial Fund the steering committee gradually created a truly national group with local chapters in various parts of the country A particularly active sub-group is the Bay Area Citizens Committee for WHO in San Francisco California

A campaign of public education on world health was undertaken in February 1953 One of the first projects was the organization of the first National Conference on World Health which was held in Washington D C 6 7 and 8 April of the same year with World Health Day—7 April—being the occasion for a suitable celebration Working groups met during this conference to discuss the Committee and the incorporation of the Committee as an independent agency was one of their major recommendations Federal income tax exemption for members and contributors was secured in September 1953

The first annual meeting of the Committee was held 9 November 1953 in New York City As part of this meeting there was a forum session on the subject "World Health and the American People" in which questions such as "Should the United States go it alone without the World Health Organization?" and "What ceiling should there be on United States appropriations to the WHO budget?" were considered by speakers familiar with and to

the Organization—Dr S Z Levine and Dr C E A Winslow, both of whom have been WHO consultants Dr A Wolman who served on the USA Delegation to the First World Health Assembly and as Chairman of the second session of the WHO Expert Committee on Environmental Sanitation, Dr H Hyde, Member of the WHO Executive Board, and Dr F W Reynolds, former Medical Officer in the WHO headquarters section on venereal infections and treponematoses At the business session, considerable progress in organizational activities was noted A budget of \$30 000 for 1954 was approved, and a more ambitious

programme and budget for the future were proposed

The second annual meeting of the Committee is taking place 11 October 1954 in Buffalo, NY Dr M G Candau, Director General of the World Health Organization, is addressing this session

The National Citizens Committee for WHO is a growing concern, and has begun to fulfil its purpose of providing opportunities for Americans to become better informed about the significance of world health the importance of international public health programmes and the responsibilities and work of the World Health Organization

Reports of Expert Groups

VACCINATION AGAINST TUBERCULOSIS

There is now convincing evidence that a specific resistance to tuberculosis can be induced by vaccination Many problems concerning this vaccination have still to be solved however, A recent WHO technical report¹ provides up to date information concerning such problems and points out the subjects on which further study is required This report the result of discussions of the WHO Expert Committee on Tuberculosis deals particularly with BCG vaccination though brief consideration is given to two other types—with vole bacillus and with killed tubercle bacilli—that are still in the experimental stage

BCG vaccines

Experience with BCG vaccines produced in different laboratories has shown that there is appreciable variation in the allergy pro-

ducing qualities of vaccines and in the degree of regional glandular reactions which they provoke, particularly when the results obtained by oral vaccination with the strain of BCG used in a number of Latin American laboratories are compared with those obtained with strains used in some other laboratories It is suggested in the report that additional study is necessary to determine whether strains of BCG actually differ biologically or whether the differences in results are attributable to variations in methods of production and administration of the vaccine or to characteristics of the vaccinated populations

Another important problem is the keeping qualities of BCG vaccines The freeze drying process seems to offer promise for the production of vaccines of good keeping qualities but further investigation is required before more general use of freeze dried vaccines can be recommended Liquid vaccine appears to maintain its allergy producing power for a

¹ *Vaccination against tuberculosis sixth report of the Expert Committee on Tuberculosis (World Health Organization Technical Reports Series No 88) 10 pages Price 1/9 \$0.24 or Sw fr 1—Published in English and in French*

considerably longer time than was believed especially if it is adequately protected from light even during manufacture and kept at a low temperature. In this connexion too further laboratory study is needed and the results of experimental work need to be correlated with the effects of vaccination in man. The final appreciation of the value of a vaccine should be based on its ability to produce increased resistance—not just allergy—in laboratory animals as well as in man.

Techniques of administration

Techniques of administration of BCG vaccine are an interesting point of discussion in the report. Consideration is given to oral BCG vaccination, a technique widely used in certain countries of South America. It seems that this form of vaccination can be carried out without inconvenience even in tuberculin reactors. There is evidence however that not every vaccine is suitable for this purpose and it would be premature to recommend that this method of vaccination be generally adopted. In view of the apparent practical advantages of oral vaccination by large doses it is recommended that comparative studies in animals between this and other methods of vaccination be undertaken although such studies would be most difficult and expensive. It is suggested in the report that this work might be undertaken by the WHO Tuberculosis Research Office, adequate financial support being given to the Office for this purpose. Until such studies have been made parenteral methods should be preferred for general use. Intradermal vaccination is satisfactory for mass vaccination campaigns.

Complications

A certain percentage of complications may be expected with any vaccine and any method of administration. The aim should be to use a vaccine which gives the smallest number of complications and yet produces a satisfactory allergy. It is emphasized in the report that small abscesses at the site of vaccination

healing within two months or non suppurative regional adenitis of moderate degree should not be considered as complications.

Selection of individuals for vaccination

What dosage of tuberculin should be used in surveys to determine who should be vaccinated? The report states that studies on this question support the view that the use of a single Mantoux test of 5 tuberculin units (TU) is satisfactory and practical for selecting individuals for vaccination. This test should therefore continue to be used in mass vaccination programmes and the arbitrary definition of tuberculin reactor should continue to be based on the presence of an induration of 5 mm or more in diameter at the end of three days.

Certain principles are set forth with regard to the selection of groups to be vaccinated in mass BCG programmes. A preliminary survey of the area should be made to determine the levels of natural tuberculin sensitivity and the prevalence of tuberculosis in some areas it might also be important to study more general social and demographic aspects such as stability or movement of population, industrial development etc. Where there is a stable population and a low incidence of tuberculosis infection the relative needs of different public health programmes should be considered and priorities established before embarking upon a mass vaccination campaign. In areas with a high prevalence of tuberculosis mass vaccination should cover all age groups from one year to that in which 80%–90% reactors to tuberculin are found. Although vaccination of the newborn would also be highly desirable in such areas this group would best be dealt with outside the mass vaccination programme. In areas with a low and decreasing tuberculosis prevalence where mass vaccination of the whole population is not carried out the selection of age groups for vaccination should be determined in accordance with the epidemiology (including age distribution) of the disease.

Tuberculin allergy

Post vaccination testing should be carried out with the same test that is used for selecting subjects to be vaccinated and the results should be expressed not merely in terms of percentage of reactors, but quantitatively using a method of measurement such as that adopted by the WHO Tuberculosis Research Office—i.e., frequency distribution of the diameter of induration measured in millimetres.

Sample checks of those vaccinated in mass programmes should be carried out periodically to see whether satisfactorily high and constant levels of allergy are maintained. Such periodic testing could be achieved by the use of special assessment teams, similar to those now working for WHO in several areas.² Since sample checks might be affected by possible variations in batches of vaccine produced in a given laboratory, regular tests should be performed on each batch to assess the level of allergy conferred by the vaccine when properly handled and administered.

The report draws attention to the importance of the use of standardized preparations of tuberculin. Biological assay of newly prepared tuberculins against the International Standard presents great difficulties and it is therefore recommended that a single large batch of PPD—enough to meet the requirements for a considerable number of years—of standard potency be prepared and be made internationally available for the purpose of Mantoux testing.

Revaccination

It is advisable that individuals and groups especially exposed to tuberculosis be tested two to three months after vaccination has been performed and that individuals found to be non reactors at this time be vaccinated again. Periodic retesting should be carried out later and all non reactors should be

revaccinated. In mass campaigns retesting should be made of sample groups to decide whether or not the whole vaccinated population should be retested.

Protective value of BCG

Large scale control trials are at present being made in the USA and in Great Britain to assess the degree of protection given by BCG vaccination in different sections of the population. Also of interest are efforts being made in Finland³ and in Denmark to assess the protective value of BCG—in the former through a national vaccination roster, and in the latter through a tuberculosis index. Where conditions are favourable, countries should be encouraged to maintain central or regional vaccination rosters so that records may be kept of cases of tuberculosis occurring in vaccinated individuals.

Assessment of the protective power of BCG vaccination in man calls attention to the need for studies of tuberculosis morbidity and for international agreement on a definition of tuberculosis morbidity. The report stresses the importance of bacteriological evidence in the diagnosis of tuberculous disease.

BCG vaccination in the public health programme

BCG vaccination should be only part of a tuberculosis-control programme and should be integrated into the general public health services of a country. Where a large scale BCG vaccination campaign is envisaged, its organization should be co-ordinated centrally or regionally and not be left to tuberculosis centres. The mass campaign should make use of all appropriate public health facilities and institutions while the tuberculosis centres should concentrate their efforts on the vaccination of particularly vulnerable individuals and groups.

² See *Chron. Wld Hlth Org.* 1954 8 288

³ See *Chron. Wld Hlth Org.* 1954 8 241

Notes and News

Rabies Vaccines

One of the tasks of WHO in its work on rabies is to assist governments in the production and potency testing of vaccines used for human and veterinary purposes. In this connexion the Organization has provided expert consultants for rabies-control assistance in many countries during the past few years. In 1952, a training course in laboratory techniques in rabies was held at the Pasteur Institute in Coonoor India. This course was attended by 48 medical and veterinary officials from 21 different countries who received instruction in diagnosis vaccine and serum production and potency testing. A monograph covering these topics has recently been published by WHO.¹

The latest request for assistance along these lines has been from Portugal. In September WHO sent to Portugal Dr P. Atanasiu of the Institut Pasteur Paris who is to work with medical and veterinary technicians in that country on vaccine production and potency testing for approximately one month. Dr Atanasiu is a well known virologist who with Dr P. Lepine, Chief of the Virus Section of the Institut Pasteur, has collaborated with the Organization in important research on rabies.

Control of Brucellosis in Sheep and Goats

The control of infection in sheep and goats is one of the most difficult problems in brucellosis. Infection in these animals is caused by *Brucella melitensis*, the most pathogenic for man of the three types of *Brucella* organisms (the other types are *Brucella abortus* usually infecting cattle and

Brucella suis usually infecting swine). *Brucella melitensis* infection (classically known as "Malta Fever") affects large numbers of human beings yearly in the Mediterranean countries and in Latin America where the infection of sheep and goats is very common. While this infection in man can be caused by the ingestion of milk and milk products from infected sheep and goats it has recently been determined that the common means of transmission is by the air borne route. This indicates that ultimate protection of man will depend on the elimination of infected animals or on the prevention of their shedding of the organism rather than on the adequate heat treatment of milk and milk products. *Brucella* infection in sheep and goats has not been studied carefully since the excellent investigations carried out by the Malta Fever Commission of Great Britain early in this century.

FAO with WHO technical collaboration undertook early in 1953 to make a systematic study of *melitensis* infection in sheep and goats. This work is being carried out in Tunis under the direction of Dr G. Renoux, a member of the FAO/WHO Expert Advisory Panel on Brucellosis who is being assisted by two FAO veterinarians assigned to this project. The centre of the operations is the brucellosis laboratory in Tunis located in the Pasteur Institute there.

The study includes the provision of hundreds of uninfected sheep and goats procured in Sweden by FAO and transported to Tunis for experimental purposes. The subjects to be covered according to a plan worked out by various members of the FAO/WHO Expert Advisory Panel on Brucellosis include the natural pathogenesis of the disease in these animals, diagnostic procedures, field transmission and finally various vaccines. Until now no brucellosis vaccines have been effective in sheep and goats but several have

¹ World Health Organization (1954) Laboratory Manual for the Diagnosis of Rabies. Geneva (World Health Organization Monograph Series No. 3).

shown promising results in small laboratory experimental animals. After further experiments in such animals, the various vaccines will be administered to sheep and goats and will be challenged with virulent organisms to determine whether protection has been conferred. These studies will not be completed until towards the end of 1955 and further investigations are envisaged for 1956.

The Government of Tunis is assisting liberally both financially and from the point of view of resources, in these highly important experiments.

International Standards of Water Quality

Requests have come to WHO from two directions regarding the preparation of internationally acceptable standards of drinking water quality. The first arose in connexion with the joint effort of WHO and the International Civil Aviation Organization (ICAO) on the sanitation and hygiene of airports. The second came as a result of discussions at the Congress of the International Water Supply Association. At the beginning of 1953, WHO canvassed its Member States to determine whether official standards of water quality were already in use and if so what these standards were. At the same time information was sought regarding experience with water borne diseases so as to lay a basis for water quality as related to disease transmission.

It was found that there are two generally accepted standards of water quality. In the Western hemisphere, the statement on water quality prepared by the US Public Health Service¹ for use on interstate carriers is generally accepted and in the majority of cases, has been officially adopted as the legal standard for the quality of public water supplies. Throughout the British Commonwealth the standards are those established by the British Ministry of Health.² Other standards exist but are not widely used outside the country of origin.

It is of interest that information regarding the incidence of enteric disease is lacking in most of the 71 replies received to the WHO questionnaire, apparently because incomplete statistical records are kept. All of the replies stressed the importance of water supply sanitation even in those areas for which little information concerning procedures, policies, and standards is recorded.

Standard methods for the examination of water are as lacking in uniformity as are standards of quality. In the 17 countries where the British practice is followed British standard methods are used, and in the 19 countries where standards of the US Public Health Service are accepted the methods of the American Public Health Association³ are employed. There seems to be almost no laboratory control of water supplies. Only a very few countries recorded the existence of government laboratories concerned with the examination of water, and the data received do not indicate any definite supervision over laboratories to ensure uniformity of practice and adherence to acceptable methods.

From the replies to the questionnaire and from interest already expressed, it is apparent that there exists a major concern in the development of international standards of water quality and the concurrent problem, which cannot be separated from the first, namely, the development of standard methods for the examination of water.

The reports received from Member States on this question have been compiled and analysed by WHO and distributed to the regional offices for use in convening regional discussions on this subject.

Standardization of Anti Snake-Venom Sera

Before the Second World War, the Health Organisation of the League of Nations undertook some preliminary studies towards a programme for the standardization of anti snake venom sera and other antivenenes.

¹ *Publ. Hlth Rep. (Wash.)* 1946 61:371-384. Reprinted No. 7697
US Public Health Service Drinking Water Standards—1946
² British Ministry of Health (1939) *Bacteriological examination of water supplies*. London: Report No. 71.

³ American Public Health Association (1954) *Standard method for the examination of water and sewage*. 17th ed. (trial wa-tes). New York: 10th ed. In press.

Details will be found in a paper by Gautier in the *Bulletin of the Health Organisation League of Nations*⁵. The World Health Organization is now exploring possibilities of undertaking a similar programme in this field of biological standardization. In association with Professor E. Grasset, Director of the Institute of Hygiene, University of Geneva, whose contributions to the study of antivenenes over a period of some twenty years in South Africa are well known, the Organization is attempting to clear the

ground for the further studies that will be necessary by obtaining information about present methods in production centres both commercial and non-commercial throughout the world. A questionnaire has accordingly been sent to a number of these centres. Those that have not yet received the questionnaire and that are willing to participate in this enquiry are requested to communicate with the Director of the Division of Therapeutic Substances, World Health Organization, Geneva, who will send the questionnaire to them. The co-operation of all antivenene production centres will be greatly appreciated.

B. J. H. & O. L. A. 1945 46, 12, 1

Review of WHO Publications

Annual Epidemiological and Vital Statistics 1951 Geneva 1954 506 pages Price £2 10s \$7 50 or Sw fr 30—Bilingual edition (English and French)

Here in a single volume are more than 500 pages of statistics covering population movements, causes of death and cases of and deaths from communicable diseases in most countries of the world.

This important work provides in a series of 63 different statistical tables the only documentation of its kind on demographic and health conditions in various countries and territories. As in previous volumes, tables are included on detailed statistics concerning tuberculosis and cancer. In addition, this volume gives for the first time some series of specific mortality rates according to sex and age for 16 important causes of death; mortality rates by sex are given for 28 other causes of death. The data thus presented lend themselves to quick and interesting analysis. An item likely to be of particular interest to health administrations is a new and up-to-date list of compulsorily notifiable communicable dis-

eases in each country or territory. The work is completed by a detailed alphabetical index by means of which the reader will be able to find easily subjects on which data are available for each country or territory.

Proceedings and Reports Relating to International Quarantine: Annual Report of the Director General on the International Sanitary Regulations First Report of the Committee on International Quarantine Relevant Proceedings of the Seventh World Health Assembly (Official Records of the World Organization No. 56 supplement to Official Records No. 55 Seventh World Health Assembly) Geneva 1954 vi+121 pages Price 6/9 \$1 00 or Sw fr 4—Published in English and in French

A detailed review of the quarantine problems associated with the early months of application of the International Sanitary Regulations is provided in this number of the *Official Records*. It carries one step further

the story of the Regulations which has been traced in previous numbers ¹

The first part contains the first annual report of the Director General on the working of the Regulations—a worldwide review of their application for the period 1 October 1952 to 30 June 1953 as seen from the Organization. Added to this are reports from States parties to the Regulations on the difficulties encountered by their health administrations in applying the Regulations and descriptions of some of the methods used to overcome these difficulties. A final section of Part I gives proposals by Member States and suggestions by the Director General for improving the text of the Regulations.

Part II of the volume consists of the report of the WHO Committee on International Quarantine which met in October 1953 to review the application of the Regulations and to consider the Director General's report and

the proposals for improvement the recommendations to the Seventh World Health Assembly concerning the Regulations and the second report of the Expert Committee on Yellow Fever.

A third part is devoted to relevant proceedings of the Seventh World Health Assembly. These comprise the report of a working party set up by the Health Assembly to consider the report of the Committee on International Quarantine and its recommendations, a verbatim record of the discussion, in plenary session, concerning the Regulations, and the resolutions relative to the Regulations that were adopted by the Health Assembly, including an important resolution on the delineation of yellow fever endemic zones.

This publication should be useful to health administrations and local authorities in that it may help them to understand more fully the difficulties encountered by other countries in pursuing the common aim—the international control of disease.

¹ See *Off Rec Wld Hlth Org* Nos 37 42 and 48

* See *Chron Wld Hlth Org* 1954 8 269

International Non-Proprietary Names

In accordance with paragraph 3 of the Procedure for the Selection of Recommended International Non Proprietary Names for Drugs Moving in International Commerce¹ notice is hereby given that the following names are under consideration by the World Health Organization as proposed international non proprietary names

<i>Proposed International Non-Proprietary Name</i> (Latin, English, French)	<i>Chemical Name</i> <i>Description</i> (English, French)
diethylthiambutenum diethylthiambutene diethylthiambutène	3-diethylamino-1,1-di(2-thienyl)but-1-ene diethylamino-3-di(2-thienyl)-1,1-butène 1
dimethylthiambutenum dimethylthiambutene diméthylthiambutène	3-dimethylamino-1,1-di(2-thienyl)but-1-ene diméthylamino-3-di(2-thienyl)-1,1-butène 1
ethylmethythiambutenum ethylmethythiambutene éthylméthylthiambutène	3-ethylmethylanino-1,1-di(2-thienyl)but-1-ene éthylméthylanino-3-di(2-thienyl)-1,1-butène 1

Comments on or formal objections to the above names may be filed within a period of six months from 1 November 1954 and should be forwarded to The Director General World Health Organization Palais des Nations Geneva Switzerland

See also WHO Weekly 1953 7 797

CORRIGENDUM

1954 Vol 8 No 6 (June) p 211 Table I line 17 (New Zealand)

	1901-05	1911-25	1952
Delete	75	—	84
Insert	75	43	22

(Note: The figure of 84 for 1952 as given previously refers to the Maori population.)

WORLD HEALTH ORGANIZATION MONOGRAPH SERIES

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Studies by the WHO Tuberculosis Research Office
Copenhagen

LYDIA B EDWARDS CARROLL E PALMER
& KNUT MAGNUS

The World Health Organization Tuberculosis Research Office in collaboration with the Danish Statens Seruminstitut and the International Tuberculosis Campaign undertook an intensive investigation of basic problems of tuberculosis immunization, with special reference to BCG. The results of the work done during the first three years of the research programme are assembled in this detailed report which by its unbiased observations and critical analysis is an important contribution to the understanding of the problems involved in BCG vaccination.

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ANNUAL EPIDEMIOLOGICAL AND VITAL STATISTICS 1951

PART I - VITAL STATISTICS AND CAUSES OF DEATH

PART II - CASES OF AND DEATHS FROM NOTIFIABLE DISEASES



WORLD HEALTH ORGANIZATION
PALAIS DES NATIONS
GENEVA
1954

NUTRITION IN LATIN AMERICA AND SOUTH AND EAST ASIA

Nutritional diseases are common in many parts of the world their nature differing largely according to the staple foods of the region. While some problems in nutrition stem from actual lack of food or of certain elements in the diet, because of economic social or agricultural conditions others are a matter of education of teaching people the proper utilization of the foods that are available. Both types of problem have been the object of considerable international study and action in recent years.

Progress resulting from such efforts and problems still to be solved were discussed at two regional nutrition conferences sponsored jointly by FAO and WHO in 1953. One of these conferences for south and east Asia,¹ was held in Bandung Indonesia the other for Latin America² was held in Caracas Venezuela. Among the principal subjects considered at these meetings and reported in FAO publications were protein malnutrition and endemic goitre. The information which follows is drawn from the sections of the conference reports dealing with these particular topics.

PROTEIN MALNUTRITION

Latin America

Protein malnutrition is a serious problem in mothers infants and children in many areas of Latin America. In children it manifests itself in a syndrome known in Spanish, as "síndrome pluricarenal" in

fantil" in this region and by other names, "kwashiorkor" in particular in other parts of the world.³ Its characteristics are similar to those described elsewhere⁴ but certain aspects of the disease as observed in Latin America warrant specific mention.

Retarded weight and height are probably the earliest manifestations of kwashiorkor in this region. Cutaneous lesions characterized by zones of hyperpigmentation are found over wide areas of the body most commonly on the external surfaces of the thighs the hips the abdomen and the back. This dermatosis begins with small erythematous areas which become confluent and pigmented and then desquamate leaving a smooth transparent and depigmented epidermis and giving the skin an irregular mosaic appearance. Alterations in the colour texture and amount of hair are less well defined than in the syndrome as described in Africa.⁵ Enlargement of the liver is not generally a very prominent feature of the disease in Latin America.

Deficiencies of other nutrients frequently associated with protein malnutrition vary from one country to another. In one country hemeralopia and xerophthalmia are associated with protein malnutrition in one third of the reported cases. In other countries deficiencies of vitamins of the B complex often accompany the syndrome.

The low consumption of foods rich in protein—milk meat fish eggs etc.—in Latin American countries is due to the insufficient production and the high cost

¹ Food and Agriculture Organization of the United Nations (1954) *Report of the Nutrition Committee for South and East Asia*, third meeting (FAO Nutrition Meeting Report Series No. 6) Rome.

² Food and Agriculture Organization of the United Nations (1954) *Report of the Third Conference on Nutrition Problems in Latin America* (FAO Nutrition Meeting Report Series No. 8) Rome.

³ An article on recent survey of protein malnutrition in children in Central America, by M. A. Iret and M. Behar will appear in forthcoming number of the *Bulletin of the World Health Organization*.

⁴ See WHO *Health Organization Report Series* 1953 72, 20.

⁵ See, for example, Brock, J. F. & A. Iret, M. (1957) *Kwashiorkor in Africa* (World Health Organization Monograph Series No. 8) Geneva.

SCHEDULE OF MEETINGS

- 1 6 November Expert Committee on Mental Health, fourth session, Geneva
- 15 27 November Malaria Conference for the Western Pacific and South East Asia Regions
Manila
- 6 11 December Joint WHO/FAO Expert Committee on Meat Hygiene first session,
Geneva

The mention of manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature which are not mentioned. Proprietary names of such products are distinguished by initial capital letters.

vention—can often be best achieved through and as part of public health programmes. The education of the public with regard to nutrition can be effectively carried out by public health personnel. It is also the responsibility of public health services to demonstrate the effects of protein malnutrition on the poorer sections of the population, bringing the problem to the attention of other government departments, since eliminating the disease is dependent upon improving socio-economic conditions and increasing food production.

Specific measures which may be applicable to many areas include the development of dairy industries and efforts to improve the distribution of milk, study of locally available foods—e.g. soya bean milk and combinations of yuca (manioc) flour and casein, wheat flour and soya, and maize and powdered milk—for infant and child feeding, the development of fishing industries and production of fish flours, teaching better dietary habits and feeding programmes of various types, particularly for the more vulnerable groups of the population.

South and East Asia

Malnutrition associated with protein deficiency is also an important problem in many countries of south and east Asia.⁶ It seems to be widespread among infants and children in India, Indonesia, and Indo-China, and cases have been reported in the Philippines, Malaya and Fiji.

In this region too there are some characteristics of the protein deficiency syndrome which differ from those found in other parts of the world. In Indonesia oedema is not a constant feature in children with other signs of the deficiency, but liver enlargement is usually found. In India liver enlargement is

a constant feature in Indo-China, in the deficiency state known as "Bouffissure d'Annam" the liver shows areas of necrosis in addition to steatosis. Another syndrome observed in this area and believed to be associated with protein malnutrition is "violent malignant syndrome" which occurs frequently among breast fed infants, is characterized by convulsions and has a high mortality rate. Dyspigmentation of the skin and hair does not seem to be characteristic of protein deficiency in either India or Indo-China. In Indonesia, a change in the bulbar conjunctiva, with an altered appearance of the limbus corneae is thought to be a sign which can be used in early diagnosis.

Throughout the region other nutritional deficiencies are commonly associated with protein malnutrition. In Indonesia the majority of children with advanced protein malnutrition show signs of vitamin A deficiency, particularly xerophthalmia. In India, keratomalacia, angular stomatitis and cheilosis have been found in conjunction with protein malnutrition, and in the Philippines deficiency of vitamin A and riboflavinosis frequently accompany protein deficiency.

Protein deficiency states are usually observed in children in the weaning and post weaning ages, particularly between 9 and 36 months, though sometimes in cases of early weaning even as early as three months. In general, children in the region are fed on rice gruel when they are weaned, and no particular attention is paid to providing the proper diet. The nutrition of the mother is also an important factor. There is some evidence that changes characteristic of protein deficiency—e.g. fatty infiltration of the liver—may occur in intra-uterine life, and lesions of the pancreas are found in premature and stillborn babies. The diet of pregnant and nursing women is determined in some countries by cultural and social as well as economic factors, and these must be studied and as complete a picture of dietary patterns

⁶ A monograph on infant malnutrition in the subtropics and tropics will be published by the World Health Organization early in 1955.

of such foods. Persons with limited economic resources are usually the most affected. In some areas, the protein deficiency is only part of a general insufficiency of calories and of essential nutrients. The most vulnerable groups of the population are pregnant and nursing women and infants and pre school children.

In Latin America, as in other parts of the world, the protein deficiency syndrome makes its appearance principally during or shortly after weaning, particularly in the age group between 18 months and 4 years. Where, for economic or cultural reasons, breast feeding is prolonged (even up to two or three years of age in some areas), infants may be protected from malnutrition, provided the milk supply is adequate. It is in groups which are weaned early that the syndrome most frequently develops. The early weaning may probably be attributed to the poor nutrition of the nursing mother and to the consequent decrease or cessation of milk secretion or, in urban areas, to the need for the mother to work outside the home. The artificial feeding which becomes essential with weaning presents both economic and cultural difficulties. The diet of infants tends to be deficient in both quantity and quality; it is composed mainly of carbohydrate (corn, yuca, polished rice, potatoes, beans and similar foods) and contains only small amounts of animal protein.

In addition to dietary deficiency, lack of attention to hygiene contributes to the appearance of kwashiorkor, which is often precipitated or aggravated by gastro intestinal or other disorders. This is particularly true in underdeveloped communities. Digestive disturbances make it difficult to administer appropriate diets and contribute to the severity of the disease—in many cases even to the death of the patient.

Studies of the long term effects of protein malnutrition are inadequate at present, but there are indications that its sequelae are of

great public health importance. The retardation of growth, the visceral lesions and other pathological changes may do irreparable damage. Protein malnutrition may also be a factor in the morbidity and mortality from other diseases, such as tuberculosis in young children. A high incidence of the syndrome among children suggests under- and mal nutrition of the population as a whole, and this reduces national output, including the production of food, which thus aggravates the problems of nutrition. Protein malnutrition is therefore a significant public health problem.

Treatment of kwashiorkor is based in Latin America, as elsewhere, on milk. In some countries of the region, acidified milk is used. It is possible to give a child 3-4 g of protein per kilogram of body weight per day in this form, which is particularly good in cases with hypochlorhydria. Some workers believe that, although skim milk is most effective for initial treatment, whole milk is to be preferred once the acute period has passed. The use of lipotropic factors is recommended by some paediatricians especially in severe cases with fatty livers and disturbances of pancreatic function.

Treatment should be based on natural foods rather than pharmaceutical preparations, but the administration of vitamins A, D and C is advisable when there are signs of deficiency of these vitamins. Vitamins of the B complex should be given with great caution and only when clinical and laboratory findings justify their use. Antibiotics may be used to advantage in treating associated infections, particularly those of the respiratory tract.

Prevention of protein deficiency calls for consideration of economic, social and cultural factors as well as of health measures and requires co operation among departments of health, agriculture, commerce and education. The improvement of the diets of infants, young children and pregnant and nursing women—the first essential in pre-

or by factors which interfere with the utilization of dietary iodine or which impose an abnormal demand on the thyroid gland." Combating the condition therefore begins with estimating the physiological requirements for iodine a subject considered at some length in the conference report.

Balance studies have indicated that the requirement for iodine is probably about 0.002 to 0.004 milligrams daily for each kilogram of body weight. The need for iodine is increased during adolescence in girls, during pregnancy and probably during growth. Certain other physiological and pathological states may also be associated with an increased requirement.

These figures indicate an average requirement of 100 to 300 micrograms daily for an adult depending upon body weight. Three hundred micrograms will probably satisfy the iodine requirements of a large majority of a population when goitrogenic factors are not of importance. There are however a number of such factors tending to produce goiter by increasing the relative requirement for iodine. Among these are compounds present in cabbage, kale, brussels-sprouts, ground nuts, soya and other foodstuffs. The ingestion of an excessive amount of calcium can increase the iodine requirement, as can also deficiency of vitamin A. There are also other factors still unidentified which have the same effect.

In El Salvador and Guatemala, the iodine content of fresh sea salt as produced is from 2 to 8 parts per 100 000. Despite this the incidence of endemic goiter in these two countries is high. Even though the actual iodine content of the salt as consumed is unknown because appreciable losses may occur in a relatively short time, it probably does not fall below the 1 part in 100 000 recommended by the WHO Study Group on Endemic Goiter as an appropriate level for the iodization of salt [1].

These findings imply the existence of goitrogenic factors in Central America and without doubt in other Latin American countries. One of the most important of these may be the lack of sufficient vitamin A since dietary surveys have demonstrated that this is among the principal deficiencies of the diet in most of the countries. These considerations led the Conference to the conclusion that the average requirement for adults in Latin America approximates to 200 micrograms of iodine daily.

Since the average requirement never satisfies the needs of all the population, especially during adolescence, pregnancy and other periods of physiological

stress, and since no adverse effects have been demonstrated from the continued ingestion in the United States and Canada for many years of salt and salt iodized at a level which results in an estimated daily iodine intake of 800 micrograms the Conference proposed that the recommended daily allowance should be double the postulated average daily requirement. On this basis, 400 micrograms of iodine daily is an amount which will satisfy the requirement of nearly all the population."

Though emphasis in solving the problem of endemic goitre should be on prophylaxis, treatment must receive some attention. The various measures which are available for treatment and which may be usefully applied in certain population groups such as schoolchildren and pregnant women include the administration of a saturated solution of potassium iodide in water or Lugol's solution (one drop in liquid daily for one week, one drop three times a week for three weeks and one drop per week indefinitely thereafter) or of tablets containing 10 mg of potassium iodide (one tablet daily for 20 consecutive days, the treatment to be repeated every six months). Such measures should be considered temporary and for use only in individual treatment.

Prophylaxis directed towards satisfying as nearly as possible the iodine requirement of the entire population should be permanent and should be achieved in an economical and practical way. "All the accumulated experience indicates that the best method of prevention is the consumption of salt which has been artificially iodized." For Latin American countries one part of iodine in 20 000 is considered a minimum level for the iodization of salt and one part in 10 000 as a maximum level; the higher concentration to be selected where there is reason to believe that there are goitrogenic factors, a low consumption of salt or an important loss of iodine from the iodized salt. Potassium iodate seems to be more practical than potassium iodide for use in the iodization of salt in Latin America chiefly because of its

[1] See *Bull. Wld Hlth Org.* 1953, 9, 795.

as possible be obtained when improvement programmes are planned

With regard to treatment, reliance on skim milk protein (and appropriate vegetable protein mixture in mild cases) is considered satisfactory. It is noted, however, that in very critical cases blood transfusion can be recommended in addition to the proper dietary therapy

In this region, as elsewhere, there is little direct information on the long term effects of protein malnutrition. Attempts have been made to study the effects on the liver, however. There has been some tendency to link untreated protein malnutrition with fibrosis of the liver and progressive cirrhosis, followed in turn by malignant lesions. But in a limited investigation in Indonesia liver biopsies showed no increase in fibrotic tissue in patients with the syndrome who were observed over a period of many months. The impression was gained that fibrosis of the liver associated with malnutrition is of slow development. Also of interest are observations in Indonesia regarding the possibility that the sub optimal physical development of adults in many parts of the world may be due to protein deficiency in the diet in a population group in which cassava replaced rice as the staple food about twenty years ago. Men in the fourth and fifth decade of age are taller and better developed physically than those in the second decade.

Prevention of protein malnutrition depends in Asia as in Latin America on appropriate production, distribution, and preservation of food, public health measures and education. Attention must be given particularly to questions concerning the supply of milk, to increasing fish supplies and utilizing fish flours, and to the possibility of using soy beans (some countries have successfully used milks made from soybeans or from soy beans combined with peanuts and malt) and other pulses, coconuts and mixed food preparations which may supply the necessary

nutrients. Improvement in nutrition requires the combined efforts of public health, social welfare, agricultural and educational agencies in programmes whose immediate aim should be to encourage and aid the development and use of protein rich foods for infant and child feeding and to educate the public in principles of healthful diet.

ENDEMIC GOITRE

Latin America

Although surveys of the incidence of endemic goitre have been made in most of the countries of Latin America, in few countries have specific measures been taken for its prophylaxis. The nutrition conference therefore undertook to summarize the data available to orient future studies and to give practical guidance in the solution of the problem which is a serious one in many Latin American countries.

By the term 'endemic goitre' is meant a visible or palpable hypertrophy of the thyroid gland found in a number of individuals in a limited geographic area. It is known that endemic goitre is present in more than 50% of the population of certain areas in Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay and Peru. In general, mountainous and highland areas are those with the highest incidence. Cretinism associated with endemic goitre was reported in nine of the countries represented at the conference, and deaf mutism from this cause was considered to occur in at least six.

The following statement concerning the etiology of endemic goitre was accepted at the conference. The immediate cause of simple goitre is the failure of the thyroid gland to obtain a supply of iodine sufficient to maintain its normal structure and function, this failure is usually produced by an absolute environmental deficiency of iodine.

range statistical programme best suited to its resources and needs. It should be self-evident that in each country the objective will pose unique problems so that international generalizations as to the specific content of the statistical programme can never take the place of specific study within the country.

Even so widely accepted a generalization as the necessity of maintaining complete and accurate registration of vital events—births, deaths, marriages, divorces, adoptions, etc.—does not apply equally to all countries. In some countries, particularly those with large nomadic populations, most of the people may have little or no use for vital records and hence no incentive to register vital events. In general, the use of vital records develops as the country establishes school systems, pension and social security plans and other programmes that require people to prove who they are—identity, age, residence, citizenship, marital status and other personal facts. Thus the development of a comprehensive vital records system is at once a sign of a country's social and economic progress and a condition to its progress. One of the difficult problems that face health statisticians in each country therefore is the question of how rapidly, how comprehensively and in what detail to develop its vital records and statistics system. If the problem is not under continuous study by the country's official statistics agency, this field alone would justify and provide worthwhile activity for a national committee on vital and health statistics.

It cannot be too much emphasized that neither international recommendations nor study within another country can ever take the place of first hand study of a country's own unique complex of needs. To take a final example, several countries may have a pressing need for and the technical capacity to establish sickness survey mechanisms to determine the current extent and type of illness in the general population. But in another country where

all but minor illnesses are invariably treated in hospitals, the reservoir of hospital statistics if properly collected and tabulated might be entirely adequate to meet the country's needs for sickness data.

In this connexion it should be mentioned that a wide variety of types of morbidity statistics has recently been classified according to uses and applicability to various types of countries. This classification which is taken from the third report of the WHO Expert Committee on Health Statistics¹ is given in table I. My purpose in including this material apart from its intrinsic interest, is to illustrate the fact that some types of data are useful or applicable in all countries while other types apply only in countries with highly developed statistical systems.

But even with the classification published and available, it would still be necessary for each country to decide for itself which types of morbidity data to use, which types not now existing should be collected and for what purposes. It is not reasonable to insist that such study and recommendations can be made through no means other than a national committee on vital and health statistics. The important point is that here is one potential use of the national committee and that in the absence of a committee perhaps the job is being overlooked.

The idea of national committees was born at the International Conference for the Sixth Decennial Revision of the International Lists of Diseases and Causes of Death held in Paris during the spring of 1948. From the beginning, it was clear that two types of tasks were of concern to the national committees—the first dealing with the introduction of national viewpoints into international problems of standardization of procedures and classifications needed for vital and health statistics at the international level and the second with the production of

greater stability In any country in which endemic goitre is a public health problem, legislative provision should be made for the compulsory iodization of salt

South and East Asia

Endemic goitre is found in many different areas of south and east Asia—in India, Indo China, Indonesia, and Thailand The nutrition committee for this region directed the attention of governments concerned to the iodization of salt as an effective and efficient means of preventing goitre

An interesting investigation of different methods of goitre prophylaxis is being undertaken by the Government of India Three comparable population groups are to be studied one will serve as a control, the second will be given salt enriched with iodide and the third will be given salt enriched with iodate The three groups are to be surveyed before the introduction of the iodized salt at regular intervals during a period of five years and at the end of the trial The whole scheme will be under medical supervision, and the possibility of toxic effects of the iodized salt will receive particular attention

NATIONAL COMMITTEES ON VITAL AND HEALTH STATISTICS *

In whatever way it conceives its needs for vital and health records and statistics or even if it prefers to believe it can get along without them, no national administration can avoid responsibility for making the best use of its resources To take a common example let us suppose it wants to begin a malaria control programme Obviously it cannot spray everywhere It needs some measure of where and to what extent the problem is concentrated, in terms of malaria incidence and mortality and, when the control programme is under way, it will need statistical measures of its effectiveness

To take an extreme example, let us suppose that the country has virtually no statistics of any kind—no census no morbidity reporting whatever, no mortality reporting Aside from general impressions, gained from the patient loads of its physicians and the continual processions of funeral corteges the country would not know the extent of its malaria problem and would be hard put to formulate an intelligent control plan Should it begin

by establishing a long range national morbidity reporting scheme? Probably not It would most likely do the best it could with spot studies using physicians records and hospital records to the extent available and trying to generalize from these specialized samples to the general population The country would face a difficult dilemma to rely on building a national system of comprehensive health statistics would take decades and have no application to the immediate problem, to rely solely on spot studies, without adequate population and vital statistics as a base, would never fully answer the questions since the results of the studies could not be related to the general population

Actually there is no way out of the dilemma but to accept the objective—to produce satisfactory vital and health records and statistics, as needed by the country according to the nature and stage of its economic development In the present instance, this would mean improvising some general statistics by way of spot studies and beginning as soon as feasible, to build the long

Extracts from article by H. L. Dunn in *Bull. Wild. Hlth. Org.* 1954 11 147

satisfactory national statistics in the fields of vital statistics and health

While the concept of national committees emerged at the Sixth Decennial Revision Conference the groundwork for it was laid in actions of the Fifth Decennial Revision Conference held in 1938. At that time much interest was expressed in the experiments in the USA in coding joint causes of death, the situation in which more than one cause of death appears upon the death certificate. The conference requested the USA to continue its investigation in this field on a wider basis and in co-operation with technicians of other countries. It was also requested that "the Joint Committee appointed by the International Institute of Statistics and the Health Organisation of the League of Nations undertake as in 1929 the preparation of international lists of diseases. Pending the compilation of international lists of diseases, the Conference recommends that the various national lists in use should as far as possible be brought into line with the detailed International List of Causes of Death."²

Acting upon the request of the international conference the Secretary of State of the United States Government in 1945 appointed the United States Committee on Joint Causes of Death which was expanded to include representatives of the Canadian and British Governments and of the Health Organisation of the League of Nations. In addition to its major assignment the committee came to grips with the second request of the conference—to see what might be done to prepare an international list suitable for the purpose of coding morbidity. The resultant draft of a classification which was a combined morbidity and mortality code was tried out in various hospitals in the three countries adjusted and turned over to the interim World Health Organization for its use and disposition after modification

to reflect the viewpoints of the countries it became the principal document used at the Sixth Decennial Revision Conference.

The conference participants were impressed by the success of this activity. After clearing other items on the agenda the conference addressed itself to the question of whether some of the other problems in the fields of vital and health statistics should be handled in a similar manner. Obviously if this were to be done the conference would have to request nations to undertake such activities, since international protocol would be necessary for nations to work on international technical problems. After considerable discussion this led to the recommendation that all nations should designate national committees to work on problems of an international nature which were of particular concern to them.

Although the emergence of the concept of national committees and the impetus behind their creation arose from the desire to introduce national viewpoints into international technical problems it was the second objective namely the improvement of the production of national vital and health statistics that became the primary concern of national committees. It had been recognized by the conference that health organizations urgently require current, reliable and comparable data in the fields of health and vital statistics and that many of the national statistical mechanisms for producing such data were relatively primitive in character. It had also been recognized by the conference that there was an intimate relationship between vital records, vital statistics, morbidity statistics and population statistics and that many of the problems could not be solved unless the national technicians came to grips with the problems of producing satisfactory data in all these fields within their respective nations.

Yet nations vary greatly in their needs for such data. Countries with advanced econo-

TABLE 1 TYPES AND USES OF MORBIDITY STATISTICS AND APPLICABILITY TO COUNTRIES IN VARIOUS STAGES OF DEVELOPMENT

Type of morbidity statistics	Coverage		Uses†	Applicability††
	population	morbidity		
Sickness surveys by home visitation of all persons in selected area representative sample of selected area representative sample of whole population	X X W	1-4 1-4 1-4	b c d e b c d e b c d e h	ABC (A)BC C
Mass diagnostic and screening surveys (tuberculosis etc)	XY	3	a d	ABC
Census enumeration of sick persons	W	3	d h	BC
Census enumeration of certain defects	W	3	h	BC
Records of notifiable communicable diseases	WX	4	a b d e f	BC
Registration of certain diseases (cancer rheumatism etc) with or without follow up survey	WX	4	c d f g h	C
Certification of certain conditions for special benefits (including special food allowances)	W	4	b d	C
Records of road accidents	WX	4	b	C
Records of industrial and occupational accidents and diseases	Y	4	b	C
General hospital inpatient records	Z	2-4	c d f g	ABC
General hospital or clinic outpatient records	Z	4	c d	ABC
General home visiting and nursing services	Z	4	d	BC
Records of special clinics hospitals and agencies (tuberculosis mental diseases venereal diseases dentistry etc)	Z	4	b c d f g	ABC
Continuous records of doctors practices	Z	2-4	d	BC
Social security schemes compulsory and voluntary	Y	1-4	c d e	BC
Voluntary health plans and funds	Y	1-4	c d e	BC
Pensions and veterans records	Y	3-4	d g	C
Life insurance and sickness insurance records	Y	3-4	e f	BC
Records of health welfare centres (maternity infant and preschool child)	(Y)Z	3-4	b c d f	BC
Medical records in educational institutions (routine inspections sickness absenteeism)	Y	1-4	a b d	BC
Records of physical examinations and sickness absenteeism in industrial civil service and other occupational groups	Y	2-4	b c e	ABC
Sickness and recruitment records of the armed forces	Y	1-4	a b g h	(A)BC

* Coverage of population

- W Whole population of country (or representative sample of it)
- X Population of selected locality (or sample of it)
- Y Selected types of persons in whole population (or samples of them)
- Z Persons applying to selected health services

Coverage of morbidity

- 1 All sicknesses at a point of time
- 2 All sicknesses during a period of time
- 3 Selected diseases or impairments at a point of time
- 4 Selected diseases or impairments during a period of time

† Uses of morbidity statistics

- a Control of communicable diseases
- b Planning for development of preventive services
- c Ascertainment of relationship to social factors

d Planning for provision of adequate treatment services

e Estimation of economic importance of sickness

f Research into etiology and pathogenesis

g Research on efficacy of preventive and therapeutic measures

h National and international study of distribution of diseases and impairments

†† Classification of countries

- A Countries with no complete enumeration of population and lacking or with only slightly developed public health and vital registration systems
- B Countries with an overall or partial census and with a well developed public health and vital registration system for parts of the population (e.g. for large towns) but not for all
- C Countries with an overall census and well developed facilities for obtaining morbidity statistics

satisfactory national statistics in the fields of vital statistics and health

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Although the emergence of the concept of national committees and the impetus behind their creation arose from the desire to introduce national viewpoints into international technical problems, it was the second objective namely the improvement of the production of national vital and health statistics that became the primary concern of national committees. It had been recognized by the conference that health organizations urgently require current reliable and comparable data in the fields of health and vital statistics and that many of the national statistical mechanisms for producing such data were relatively primitive in character. It had also been recognized by the conference that there was an intimate relationship between vital records, vital statistics, morbidity statistics and population statistics and that many of the problems could not be solved unless the national technicians came to grips with the problems of producing satisfactory data in all these fields within their respective nations.

Yet nations vary greatly in their needs for such data. Countries with advanced econo-

mic development have complex needs requiring an elaboration scope, and detail utterly impractical for nations relatively underdeveloped economically, sparsely settled and with little statistical mechanism to build on. However, as a goal, national committees were urged to study broadly the problem of producing satisfactory national and international statistics in the fields of health and vital statistics and not to overlook the study of problems of producing health statistics related to the family structure and to the social economic and occupational background of individuals. The conference recognized that the national committees in the various regions of the world should pay particular attention to the types of statistics needed in their respective regions. For instance, the tropical countries should emphasize the study of the statistics needed for tropical disease control, and the committees in countries facing the problem of population pressure and malnutrition should pay particular attention to the statistics needed for those problems. Furthermore, it urged that all national committees recognize the great value to be gained by close co operation with schools of medicine and public health in the solution of the problems of statistical education and training in the fields of vital and health statistics.

Another major area of activity concerns the co ordination of statistical activities within the country. For example, in Latin America the production of vital and health statistics is split among three major branches of government—the *registro civil* usually located in the department of justice, health

statistics in the ministry of health, and vital statistics ordinarily located in the department of commerce. Similar problems exist in many other parts of the world.

All this suggests that every country has a place somewhere in its pattern for a national committee. The scope of what is needed is so broad that a properly organized national committee attuned to these broad problems tends to fill in gaps not being taken care of by established official mechanisms.

In the author's judgment the forms and patterns of national committees will vary as much in the future as they do now. The important unifying element is whether they accept and live up to a common set of objectives that are at once practical and noble. If they are actuated by similar goals and ideals, it is not of any great moment what particular niche they fill in their respective countries.

It is doubtful whether the national official statistics agency of any country would contend that it is doing everything necessary to put these objectives into full effect. To the extent that other tasks take priority and prevent the national agency from attending to the full list of objectives the national committee has scope for useful work.

In all countries the national committees can make it their major business to keep the broad goals in view, and to help the country and its official agencies to strive persistently toward the country's own objectives. If the committee has no other function it can be a prod, a spur, a stimulant, it should be the conscience of the statistics system.

Vital and Epidemiological Statistics

A recent number of the *Epidemiological and Vital Statistics Report* (volume 7 number 10) is devoted to tables of statistics on infant mortality and neonatal mortality in selected countries and to statistics on cases of and deaths from a number of infectious diseases—epidemic typhus and other rickettsial diseases, cerebrospinal meningitis (meningococcal), chickenpox and acute infectious encephalitis.

WHO'S ROLE IN VITAL AND HEALTH STATISTICS *

As the successor to the Health Organisation of the League of Nations and the Office International d'Hygiène Publique WHO assumed the statistical obligations formerly laid upon these two organizations in fact many of WHO's statistical activities are a continuation of those initiated by the League of Nations. Another legacy bestowed upon the Organization by the International Conference for the Sixth Decennial Revision of the International Lists of Diseases and Causes of Death in Paris in 1948 is the improvement of international uniformity and comparability of statistics on morbidity and mortality.

Constitutionally WHO is required to establish and maintain epidemiological and statistical services and to establish and revise as necessary international classifications of diseases and causes of death. Each Member State in turn is required by the WHO Constitution to "report annually on progress achieved in improving the health of its people" and to "communicate promptly to the Organization statistics pertaining to health which have been published in the State concerned" providing "statistical and epidemiological reports in a manner to be determined by the Health Assembly."

How does WHO fulfil its statistical responsibilities? A brief review of some of the Organization's activities may demonstrate its role in vital and health statistics.

International Statistical Classification

Among the Organization's first important acts were the preparation of the International Statistical Classification of Diseases, Injuries

and Causes of Death and the adoption of WHO Regulations No. 1 by the First World Health Assembly to guide Member States in the application of the international classification in compiling health statistics. The *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death* was published in English, French and Spanish for use by health and statistical administrations. This was a big step forward in the improvement of the international uniformity and comparability of health statistics.

WHO Centre for Classification of Diseases

To aid in the solution of problems arising in the application of the international classification the Organization established in 1951 in London the WHO Centre for Classification of Diseases. The Centre answers queries, provides assistance and carries out investigations on factors affecting the comparability of statistics. In addition it is working for the improvement of medical certification of causes of death, issuing instructions to guide physicians on the use of the International Form of Medical Certificate of Cause of Death which is contained in the *Manual*. Another of the Centre's concerns is the training of statistical coders; it collects information on the available experience in numerous countries and develops teaching materials and techniques.

The Centre's function is gradually undergoing a change. The queries which it has answered have suggested modifications and additions which should be considered in the next revision of the classification and the Centre's role is increasingly becoming one of preparation for this revision (see page 336).

* Drawn from articles prepared by the Division of Epidemiological and Health Statistical Services of the World Health Organization and published in *Bull. Wild Health Org.* 1954, 11, 242-53.

Expert committee

A WHO Expert Committee on Health Statistics has been established and with the aid of various subcommittees has considered a number of subjects such as definition of stillbirth and foetal death, registration of cases of cancer, hospital statistics and others. The committee provides the machinery by which questions relative to international nomenclature and classification of diseases, certification of deaths, and comparability of vital and health statistics may be considered.

Publications

WHO has, since its creation, maintained or resumed continuous publication of a series of weekly, monthly, and annual epidemiological and vital statistical periodicals inherited from the pre-existing international health organizations. Those issued at headquarters are the *Weekly Epidemiological Record* now in its 28th year, the monthly *Epidemiological and Vital Statistics Report*, now in its 24th year, and the *Annual Epidemiological and Vital Statistics* now in its 31st year. A *Weekly Fasciculus* covering countries bordering on the Western Pacific and Indian Oceans has been issued at Singapore for 26 years,

similar weeklies are issued in Alexandria and in Washington, where the Regional Office for the Americas also puts out a quarterly statistical publication.

Training of personnel

Another aspect of WHO's work in the domain of statistics is the training of statistical personnel. This activity takes two forms: the award of fellowships and the sponsorship of seminars or training centres, in conjunction with the United Nations and with the governments of host countries. From 1947 through 1952, 55 fellowships in health statistics were granted. Seminars or training centres in Ceylon, Chile, Egypt and Japan have provided instruction for 151 responsible officers engaged in the development of national statistical services. A training course for coders was given by the Organization in 1951 for 20 participants from 16 countries of the European Region.

In its programme of training statistical personnel, WHO emphasizes the applied side of statistics, in a desire to improve the quality and coverage of national statistics by more efficient use of the staff and resources already existing within each region and country.

CHANGING STRATEGY IN MALARIA CONTROL *

Malariaologists and public health services would be able to view with complete satisfaction the remarkable results of malaria control by means of DDT, which has been in progress for about ten years, if recent developments did not call for a revision of the present strategy.

By house spraying with residual action insecticides, one can aim not only at con-

trolling malaria but even at eradicating it. This of course does not mean or require eradication of the vector: it only means eradication of the malaria parasites. If transmission does not take place, malaria dies out spontaneously. Infection with *Plasmodium falciparum* generally lasts no longer than one year, with *P. vivax*, generally no longer than two or exceptionally, three or four. Only infection with *P. malariae* may persist throughout life, but it is not known for how many years it remains infective for

*Résumé of an article by E. J. Pampana, which is to appear in a forthcoming number of the *Bulletin of the World Health Organization*.

the mosquitos. Disregarding infection with *P. malariae* which is by far the rarest of malaria infections and in many places is not present at all it must then be admitted that, once the transmission of malaria in a country has been completely stopped for three or four years there will be no more malaria parasites in the human or the mosquito host. Malaria control can then be withheld provided the country concerned is protected from reimportation of parasites.

Certain countries have already achieved this objective. It was in 1953 that, in view of the experience of certain countries particularly Greece the Expert Committee on Malaria concluded that "the practice of discontinuing residual spraying under proper safeguards after several years of achieved malaria control is both logical and feasible".¹ It was thus recognized that expenditure on malaria control might be lightened after a few years, a consideration of great importance for highly malarious countries.

However the requisite conditions for discontinuing residual insecticide spraying are not fulfilled everywhere. In fact, few countries would be justified in discontinuing it at present. First of all, the discontinuation requires that transmission has not occurred for several years and therefore that malaria parasites in man or mosquito no longer exist in the given area. Further the area where this end point of transmission has been reached and maintained must be a major part of the territory possibly so outlined as to have no endemic malaria on its borders or within them.

In planning for the interruption of insecticide spraying various conditions must be borne in mind. First within the area to be controlled every locality where transmission is possible should be under control. Secondly the assessment of the results should make it possible to determine accurately if and where total interruption of malaria transmission

has been achieved. Current methods of assessment do not always seem sufficiently sensitive for this purpose. Infant parasite rates may have reached zero though some transmission is still occurring. Therefore the localities should be visited regularly and all subjects having fever or having had fever during the intervals between visits should have their blood examined. Such examinations which are being carried out in Greece should start at least one year before interruption of the spraying campaign is envisaged. Thirdly malaria control should be undertaken with the greatest technical thoroughness all at one time and in as large an area as possible preferably bordered by areas where naturally or as a result of control there is also no transmission. The greater the extent to which adjacent areas or countries have been subjected to similar malaria-control measures the less will be the danger of reintroduction of parasite carriers.

The resistance of insects to insecticides now complicates the planning of malaria control programmes. Although "behaviouristic resistance" may not interfere with malaria control acquired physiological resistance when high is bound to interfere. According to recent information from Greece not only *A. sacharovi* but also *A. maculipennis* and *A. superpictus* have developed some degree of DDT resistance. Evidence seems to indicate that in certain villages DDT failed to prevent transmission.

If this danger is ignored resistance may develop after a large-scale programme has been under way for some years. It may extend to other chlorinated hydrocarbon insecticides and may make necessary the use of other more dangerous and more costly insecticides. Health services may also have to avail themselves of the techniques of malaria control used previously which although more effective today than formerly because of the new antimalarials now available would be applied to populations which had

lost the natural immunity conferred by endemic infection. To heed the warning from Greece means to plan the programme in such a way that house spraying can be safely discontinued before insecticide resistance develops. The larger the area throughout which the end point of transmission is attained at the same time the more safely can the spraying be discontinued. To prevent the development of resistance, in discriminate spraying and the use of the insecticide for larval control should be avoided.

It is realized that this new strategy, which must be applied to huge areas and which calls for thorough control for a number of

years, will require more money, more trained personnel greater efficiency of operations, and better systems of epidemiological surveillance than are necessary now. These difficulties would be counterbalanced by better and quicker results and by the hope of seeing malaria become a less heavy burden on the budgets of health administrations after a few years. Should this strategy not be adopted, it is possible that house spraying might remain effective but would have to be continued year after year. It is also possible however, that resistance to insecticides might develop in anophelines, increase become polyvalent, and lead to the ultimate failure of the whole programme.

International Pharmacopoeia Available in Spanish

Volume I of the *Pharmacopoeia Internationalis* which appeared in English and in French in 1951 is now available in Spanish. This the first international pharmacopoeia and the culmination of efforts begun in 1937 by the League of Nations Health Organisation is a publication of considerable importance to physicians, pharmacists and others concerned with pharmaceutical preparations. It establishes international standards and nomenclature for drugs and preparations in universal use and should be especially useful to countries which do not yet have a national pharmacopoeia or to those whose national pharmacopoeia is not up to date.

Monograph on BCG Vaccination in French

A French translation of the WHO monograph *BCG Vaccination* by Lydia B. Edwards, C. E. Palmer & K. Magnus has recently been published. This monograph is a report on studies made at the WHO Tuberculosis Research Office, Copenhagen (see *Chronicle of the World Health Organization* 1953 7:75).

Reports of Expert Groups

HEALTH EDUCATION OF THE PUBLIC

Increasing attention is being given to health education as an essential part of all efforts to improve health and general welfare. Health education encompasses much more than instruction in health practices; encouragement of the use of health services and promotion of specific health projects, although all these are within its province. Rightfully understood, it enters into many aspects of daily living, with numerous opportunities being afforded in family and community activities for direct or indirect learning about health. Such opportunities and ways of taking advantage of them are among the subjects considered in the first report of the WHO Expert Committee on Health Education of the Public.¹

This first report is considered "an introductory study of health education as an aspect of health work, common to many different activities." It emphasizes the necessity for adapting health education to the educational, social, economic and cultural conditions of different countries, and for studying a population thoroughly before embarking upon a health education programme.

The general objective of health education is "to help people to achieve health by their own actions and efforts" developing in them "a sense of responsibility for their own health, betterment as individuals and as members of families, communities or governments." The first step is to make health a "valued community asset" working through group action aimed at the solution of community problems, whether or not these problems be directly related to health. The next concern is to help individuals in activities having a bearing on health—e.g. child care, family feeding and food hygiene. In this social or religious

practices may often prove useful as starting points for health education. A third objective is to promote the development and proper use of health services.

In health education, as in general education, planning methods and procedures must take into consideration both the learning process and the factors which may have an influence upon the operation of this process. It is stressed in the report that learning is an active process dependent upon the individual's own efforts. To make the required effort, the individual must be motivated by forces such as goals, interests or group approval. These forces also determine what is learned. Because each person comes to a given situation with a different background of experience, each reacts differently and learns accordingly. As a general rule, more is learned through real life experiences than through academic lectures or discussions, and effective learning is based on understanding. This is of primary importance in health education, since the desired changes in behaviour and practices are not apt to be made unless the scientific reasons for such changes are really understood.

The health education worker must acquire first-hand knowledge and appreciation of the people with whom and for whom he intends to develop a health education programme, so that he can plan and use educational methods which will harmonize with their life and character. If the people believe in indigenous practitioners (e.g. magical practitioners, secular physicians), perhaps the best approach to health education is to work with and through these practitioners. Account should be taken of present knowledge and beliefs which may provide feelings of security for those of whom they are a part. "The new system of certainties which health education offers can be accepted with good results only

WHO Bulletin, Vol. 1, No. 2, p. 1954. 89. 42 pages. Price 1/6
\$0.25 or 5s 1/- Published in English and in French.

when it can be integrated with the existing values and concepts of the group concerned

The methods and media selected for health education must also be adapted to the local situation. The health education worker should preserve an experimental attitude to his tools so that he can be flexible in using them and critical of their appropriateness. Methods should be chosen which will allow the greatest possible participation of the people themselves utilizing to advantage their interests and skills.

In the selection of health education media several factors ought to be considered: (1) costs of production, (2) facilities for local production, and (3) human resources available to produce and use them. The most effective media are those which make the learning most complete and closest to first hand experience. Ideally, the health educator will choose reality first (e.g. handling a baby is best learned by handling a baby), explaining why certain recommendations are made and providing supervised practice. When models or other forms of substitution must be used, they should be as close to reality as possible.

Since every contact with the public that health workers have is a learning situation it is important that all types of health personnel be trained in the principles and practice of health education. Some instruction in health education should be included in the training of doctors, nurses, sanitarians, midwives, social workers, nutritionists, and workers in

related health disciplines. Attention should be given to the opportunities afforded by the hospital for training and practice in health education of the public, to the possibilities of incorporating instruction in health education in post graduate courses for doctors, nurses and others, and to the initiation of in-service training programmes for health and other personnel.

School teachers have a particularly important role to play in health education and should be prepared for assuming this role.

There are many places in which a specialist in health education is called for, and the professional preparation of such specialists must include a good, general cultural background as well as specific training in educational techniques and supervised field experience.

The WHO report underlines the need for further studies in health education and suggests specific subjects for such studies. It is concluded with an annex describing selected methods and media for use in health education.

Although it is not a detailed study of techniques, this report provides much information on the guiding principles of health education, suggests how programmes should be planned, organized and evaluated, outlines the factors involved in the selection, development, and use of methods and media, and discusses the training of personnel engaged, directly or indirectly, in health education of the public.

THE ADMINISTRATION OF NURSING SERVICES

Changing social patterns and advances in modern medical care are bringing new demands to bear upon nursing services. More and more hospitals and other health agencies are feeling the need of assistance in developing nursing services to meet these demands. An effort to aid in one aspect of this problem is represented by the third report of the WHO

Expert Committee on Nursing,¹ which deals with the principles of administration of nursing services.

The report defines the objective of nursing services as the provision of the nursing care required for the prevention of disease and the

Wld Hlth Org. techn. Rep. Ser. 1954 91. 48 pages. Price 1/9 \$0.25 or Sw fr 1.—Published in English and in French

promotion of health and of the actual care of the patient as required in the interest of his mental and physical comfort and by reason of the disease from which he is suffering. Attention is called to the necessity of co-ordinating nursing with the other activities involved in the care of the patient—i.e. those carried on by the doctor, the social worker and others. This co-ordination may entail the assumption by the nurse of responsibilities usually belonging to these other workers and the consequent delegation of some of the nursing duties to personnel with less training. In any case however the total care must be "patient-centred" and all the functions of the health personnel determined by the patients' needs and the limitations of the available service.

In a description of the present stage of development of nursing service the report stresses the changing role of the nurse. Increasingly the nurse is being called upon to perform functions relative to prevention of disease, rehabilitation and health education or functions of an administrative nature. Since this means that she has less time for actual patient-care the assistance of less highly skilled workers becomes essential. Other factors in the present picture of nursing services are the problem of the lack of status of nursing in many countries which has prevented nurses from assuming the administrative authority rightfully theirs and the lack of adequate financial support for nursing services. Problems such as these require consideration by all those affected by the activities of nursing and related staff, not just by nurses alone.

For any amelioration in the administration of nursing services a plan formulated jointly by all those concerned is necessary. The report describes the various steps in the evolution of such a plan and gives two detailed illustrations of planning in the solution of specific problems. It then proceeds to set forth principles of administra-

tion emphasizing the importance of human relations. The fostering of good human relations is considered one of the main tasks of nursing service administration. Many factors are involved among them the proper exercise of authority, avoidance of tensions, encouragement of outside interests so that nurses may have a well rounded life, understanding of personal problems, periodic evaluation of performance of duties, promotion of a sense of responsibility, careful assignment of personnel to functions suited to their capabilities and interests and opportunities for advancement.

An effort is made to translate the principles of administration into action in terms of the division of duties at various levels. The report outlines levels of authority and responsibility of nursing service in a public health agency and in a hospital, showing the relationships between nurses in certain posts and other health workers. Stress is laid on the principle of assuring that authority be commensurate with responsibility: no one should be held accountable for activities of any kind without being assigned the authority necessary to discharge the responsibility involved. It is suggested that the team method of work can and should be used at various levels of the nursing service.

Lack of adequate preparation for the assumption of administrative duties is at the root of many of the difficulties in nursing service administration. In service or other types of training programmes for graduate nurses are proposed as a possible solution to this problem and the report suggests elements which should be included in a programme of study for nursing service administration. Small group discussions or working conferences and seminars might be useful adjuncts to or substitutes for organized courses.

In summary the report states "A clearly defined policy, sound planning and good human relations are fundamental to effective [nursing service] administration."

Notes and News

Regional Committee for the Western Pacific

The fifth session of the Regional Committee for the Western Pacific was held in Manila from 10 to 16 September 1954. Representatives of 14 Member States participated, together with observers from a number of international organizations. Dr H S Gear, Assistant Director General of the World Health Organization, attended the session. The Chairman was Dr F S Maclean, representative of New Zealand and Director of the Division of Public Hygiene of that country's Department of Health.

The committee adopted the report of the Regional Director on the activities of 1953-54. It expressed particular appreciation of the increase in the number of fellowships within the Region: 26 intra-regional fellowships within the year as compared with 12 for the previous year. Sixty-one individual fellowships were awarded. Fellows were placed particularly in Australia, Japan, New Zealand, and the Philippines.

The committee re-examined the 1955 budget, which had had to be modified in view of financial restrictions. Dr Fang, Regional Director, explained how the necessary adjustments had been made: certain savings in 1954 had been transferred for use in 1955, and some projects had been postponed to 1956. Less urgent projects will be implemented if funds become available.

The regional programme and budget for 1956 were approved. The principal activities planned for 1955 and 1956 relate to the control of malaria, tuberculosis, venereal diseases and yaws, but attention will also be given to professional education and training, maternal and child health, nursing, health education of the public, environmental sanitation, and the strengthening of public health administrations.

On the proposal of the representative of

Australia, supported by the representative of the Philippines, the committee decided that if economies effected in 1954 and 1955 made the necessary funds available, priority would be accorded to implementing projects requested by Cambodia, Laos, and Viet Nam that are included in a supplementary list of projects.

Some of the main recommendations or suggestions of the committee were

- that the Regional Director allocate in so far as possible the necessary funds in 1956 for a travel study tour within the Region for the purpose of promoting closer co-operative efforts

- that health authorities in the Region be asked to prepare papers on the public health aspects of virus diseases, particularly insect-borne virus diseases, for the consideration of the relevant WHO expert panel, and that a seminar on the subject be held at a later date if the panel members should think it advisable

- that the staff of the Regional Office and consultants be required to give first priority to the least favourably situated Member countries

The committee decided that its sixth session should be held in September 1955 at Singapore.

Technical discussions were held during the course of the fifth session. The subject was

Public health administration with particular reference to the organization (development) of health departments (services).

Regional Committee for Europe

The Regional Committee for Europe met at Opatija, Yugoslavia, from 13 to 16 September 1954, under the chairmanship of Professor A Stampar (Yugoslavia). The governments of 23 countries were represented.

The committee noted with satisfaction the report on 1954 activities submitted by the

Regional Director Dr N D Begg This report included a detailed analysis of assistance given to Member governments revealing for example that during the first six months of 1954 WHO awarded 113 fellowships for advanced training and research in the Region and that co operation in public health between countries in Europe included thirty separate activities among them conferences training courses and studies of common health problems

The committee reconsidered the programme and budget for 1955 in the light of modifications required by reduction of the Organization's budget Without any increase in allocation of funds however a training course on treatment of poliomyelitis was added to the programme for the year since it was felt that the experience gained in countries that had had serious epidemics should be made available to other countries as soon as possible The treatment methods to be studied were developed in 1952¹ and reduced the mortality among patients with respiratory and bulbar involvement from above 80/ to about 40/ The training course will be held in Denmark early in 1955

The proposed programme and budget for 1956 were adopted without change the provisions being essentially for the continuation and consolidation of activities in progress One addition however is the extension of the campaign against communicable eye diseases now being carried out under the auspices of WHO and UNICEF in Morocco (French Zone) and Tunisia to Algeria and Spain Other proposals include a meeting of experts on virus and rickettsial diseases and a study of the problem of alcoholism in Europe

The committee took the final step in dissolving the International Anti Venereal Disease Commission of the Rhine in view of the fact that "the objective for which the Commission was created has been achieved since venereal diseases no longer constitute a problem among Rhine boatmen"²

The 1955 1956 and 1957 meetings of the committee will take place in Vienna, Rabat and Copenhagen respectively Technical discussions are planned for the 1955 session on the subject "Changes in health services necessitated by the ageing of populations" a problem of increasing importance in the European Region

Regional Committee for South East Asia

The Regional Committee for South East Asia met from 21 to 25 September 1954 in New Delhi for its seventh session It brought together representatives from nine countries under the chairmanship of Dr C K Lakshmanan (India) The session was opened by Prime Minister Jawaharlal Nehru

In his report on the activities of the Regional Office for the period July 1953 to July 1954 Dr C Mani Regional Director stressed the special conditions characterizing the Region where many countries in the midst of social transformation "want big things and want them quickly" The desire to undertake a large variety of projects sometimes leads to dispersion of effort but the administrative machinery is not yet fully geared to deal adequately with the enormous social and physical changes that are involved However there is great enthusiasm, and important work is already under way WHO UNICEF the Colombo Plan and FOA (Foreign Operations Administration of the USA) are all lending valuable assistance

National health budgets are slowly and steadily rising. It is necessary to see to it that the funds are not dispersed too widely and that "a disproportionate amount does not find its way into hospitals and dispensaries in preference to schemes for safe drinking water supplies and elementary sanitation"

During the past year India's national health programme for example included measures such as the protection of 90 million persons against malaria plans for rural and urban sanitation improvements BCG vaccination of 9 million persons (29 million tested) inauguration of a leprosy-control

¹ See Chron. Wld Hlth Org 1954 8 2-3

² Report of the third session of the International Anti Venereal Disease Commission of the Rhine (unpublished document EUR/CIAR/37 Rev 1)

programme, expansion of maternal and child health projects especially in community projects areas, and plans for intensification of training of auxiliary health workers. Programmes in other countries included, in addition to projects such as the above, the control of treponematoses, smallpox, plague, brucellosis, trachoma, and typhus, large scale training programmes, and the strengthening of many local medical institutions. WHO awarded 104 fellowships and sponsored and aided the technical training of 2 188 health workers in South East Asia.

The Regional Committee approved for 1956 an expenditure of \$4,700,000, which will be contributed either from the WHO regular budget, by UNICEF, or by the Technical Assistance programme of the United Nations. It drew up detailed proposals for WHO's assistance in more than 120 different projects for Afghanistan, Burma, Ceylon, India, Indonesia, Nepal, and Thailand. It was decided to give high priority to environmental sanitation and to health education. Dr Lakshmanan expressed the opinion that this emphasis could result in a revolutionary achievement during the next several years.

The committee also gave its attention to the problem of the shortage of physicians in South East Asia and to the necessity for the readjustment of medical education to meet the actual needs of the Region.³ Delegates agreed to urge governments to expand training facilities and to orient the curriculum of medical schools towards greater emphasis on the preventive and social aspects of medicine. Similar recommendations were adopted with regard to alleviating the shortage of nurses throughout the Region.

What is needed now, Dr Mani declared, is to achieve strengthening of the public health directing staff at the central and provincial levels in order to ensure that (1) gains already made are consolidated, (2) major effort is restricted to a few carefully selected priorities, and (3) arrangements for producing adequately trained personnel are intensified and their utilization assured.

The Regional Director informed the committee that Dr S F Chellappah, Deputy Regional Director since 1949, was retiring on 25 September. Dr Mani paid a warm tribute to the valuable services Dr Chellappah had rendered to the World Health Organization.

Experts on Health Statistics Meet

Ways and means of improving the collection, compilation and interpretation of health statistics were the subject of discussion of the WHO Expert Committee on Health Statistics at its fourth session, held in Geneva in mid September. This committee's work is part of the preparation for the seventh revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death⁴ which is to be completed at an international conference in 1955.

Among the problems considered by the committee was that of the statistical classification of death due to more than one cause. Another was the formulation of a simple classification for use in registering causes of death in underdeveloped areas lacking qualified medical personnel and statistical facilities. Still another subject of study was the improvement of morbidity statistics in more advanced countries, where precise data on specific diseases are needed as the basis for public health measures.

Present at this meeting of the Expert Committee on Health Statistics were Mr F F Harris (Chairman), Dominion Bureau of Statistics, Ottawa; Dr M J Aubanque (Vice Chairman), Institut National de la Statistique et des Etudes économiques, Paris; Dr I M Moriyama (Rapporteur), Department of Health, Education, and Welfare, Washington; Dr C Dr A H T Robb Smith (Consultant), University of Oxford; Oxford; Dr Munir Grais, Ministry of Public Health, Cairo; Dr W P D Logan, Head of the WHO Centre for Classification of Diseases, General Register Office, London; Dr K C K E Raja, Ministry of Health

³ See Chron. *Wld Hlth Org* 1954 3: 236

See page 327 of this number of the *Chronicle*

New Delhi and Mr H G Corbett Technical Assistant WHO Centre for Classification of Diseases Southport

If publication is authorized by the WHO

Executive Board the report on this session of the Expert Committee on Health Statistics will appear in the *World Health Organization Technical Report Series* early in 1955

Review of WHO Publications

Bulletin of the World Health Organization 1954 II No 3 special number devoted to yellow fever in Africa 194 pages Price 10/- \$1.50 or Sw fr 6—Articles in English or in French, with resume in the other language

Yellow fever which formerly ravaged the American continent and the southern half of Europe remains endemic in Africa and constitutes a grave threat to vast regions of the world

The World Health Organization anxious to fulfil the duties specified in its Constitution has not ignored the problem and the International Sanitary Regulations contain special provisions for preventing the spread of yellow fever WHO centralizes and circulates epidemiological information on the disease and notifies health administrations of endemic or infected areas it also approves vaccines for use prior to the issue of international vaccination certificates In addition WHO assembles technical information on yellow fever in accordance with the recommendations made in 1949 by its Yellow Fever Panel¹

Within the framework of these undertakings the WHO Regional Office for Africa organized a seminar on yellow fever in Africa held at Kampala Uganda in September 1953 Some of the main contributions on yellow fever in Africa presented at that seminar are contained in this number of the *Bulletin of the World Health Organization*

Others especially those dealing with vaccination against the disease will be the subject of a monograph to appear shortly

Africa provides a useful field of investigation and our knowledge of yellow fever there both in the laboratory and in nature has been considerably enriched It was there for example that it was discovered that the epidemiology of the disease differed appreciably not only between one continent and another but also at times—as in Uganda—from one part of the same territory to another In the first article A H Mahaffy—one of the leaders in this research—gives an account of these differences and of the problem of yellow fever in Africa

F H Bonnel & Z Deutschman then describe the extent of yellow fever infection in each territory The results of yellow fever surveys carried out between 1951 and 1953 under the auspices of WHO with the object of determining the southern limit of the infection are given Tables and maps portray the most recent investigations and the distribution of clinical cases reveals the extent of the "silent" areas in Africa

An article by F N Macnamara on a diagnostic procedure for yellow fever in West Africa is of particular interest to public health and laboratory workers The isolation of yellow fever virus from the blood of patients can be effected by any adequately equipped laboratory and this method makes early diagnosis of the disease possible The necessary health-control measures can thus be instituted with a minimum of delay

¹ *World Health Organization Report* 1950 19

W H R Lumsden examines the results of mouse protection tests on the sera of Africans in Kenya and recalls that, in the evaluation of laboratory data, the possibility of previous vaccinations must be borne in mind. This work refers to Kenya, but the conclusions can of course, be applied to all territories where human sera have been or will be tested.

Any study of yellow fever epidemiology would be incomplete without a careful entomological survey, knowledge of the species of mosquitos which play a role in the maintenance and transmission of the virus is absolutely essential. B. De Meillon describes such a survey and gives the results of his research on known and possible vectors of yellow fever in southern Africa.

The purpose of all work undertaken on yellow fever is to achieve prevention of the disease and protection of populations at risk. An article by H. Breteau gives details of the

preventive measures adopted and of the results obtained by systematic vaccination of the population and control of *Aedes* within a limited area in French West Africa.

Finally, a collection of short notes and reports refers to yellow fever or its vectors in certain territories. F. Cambournac reports on Angola and the São Tomé and Príncipe islands. M. Chabaud deals with Ethiopia. M. L. Freedman with Bechuanaland. W. H. R. Lumsden with Entebbe airport, Uganda and M. D. Prates with Mozambique. These notes contain valuable information for all interested in yellow fever in Africa.

This number of the *Bulletin* does not attempt to deal exhaustively with yellow fever in Africa. Much has been accomplished but much remains to be done. The information and facts given are of considerable importance and will, it is hoped, assist in the task which lies ahead.



CHRONICLE OF THE WORLD HEALTH ORGANIZATION

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SCHEDULE OF MEETINGS

1954

- 6-11 December Joint WHO/FAO Expert Committee on Meat Hygiene, first session, Geneva
The agenda for this meeting includes subjects such as the epidemiology of meat borne diseases abattoir hygiene meat inspection laboratory tests in meat hygiene the training of meat inspectors and the control of food handlers and meat markets

1955

- 10 January Executive Board Standing Committee on Administration and Finance Geneva
- 18 January Executive Board fifteenth session Geneva

The mention of manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature which are not mentioned. Proprietary names of such products are distinguished by initial capital letters.

YELLOW FEVER IN AFRICA

Knowledge of yellow fever has been steadily increasing since the turn of the twentieth century when Dr Walter Reed and his associates acting on a theory of Dr Carlos Finlay demonstrated that the disease is propagated by mosquitos. This discovery has made possible the virtual eradication from many countries of a disease which for more than two hundred years was one of the major plagues. But yellow fever is still a serious health problem in some parts of the world—Africa and the Americas particularly—and there is a constant fear that, without adequate control measures and the enforcement of certain quarantine regulations the disease might spread to the East where among a non immune population, it could have a devastating effect.

Yellow fever has always been a concern of the World Health Organization. The Organization collects and disseminates epidemiological information on outbreaks of the disease, defines and delineates yellow fever endemic and receptive zones, approves vaccines for use in immunizations, recorded in international vaccination certificates and promotes and aids study of yellow fever. As one of the quarantinable diseases, yellow fever is the subject of provisions in the International Sanitary Regulations (WHO Regulations No. 2). In addition WHO has since 1950 participated in insect-control programmes in the Americas where *Aedes aegypti*-eradication efforts have been in progress for many years with aid from the Rockefeller Foundation and the Pan American Sanitary Bureau, now WHO Regional Office for the Americas.

In 1953 special attention was focused on the problem of yellow fever in Africa through the sponsorship of a seminar held in Kampala, Uganda. This seminar provided

an opportunity for a general review of current knowledge of yellow fever and its control. Some of the papers presented at the seminar have now been published in the *Bulletin of the World Health Organization*¹ others, especially those on the subject of yellow fever vaccination, are to appear in a WHO monograph now in preparation.

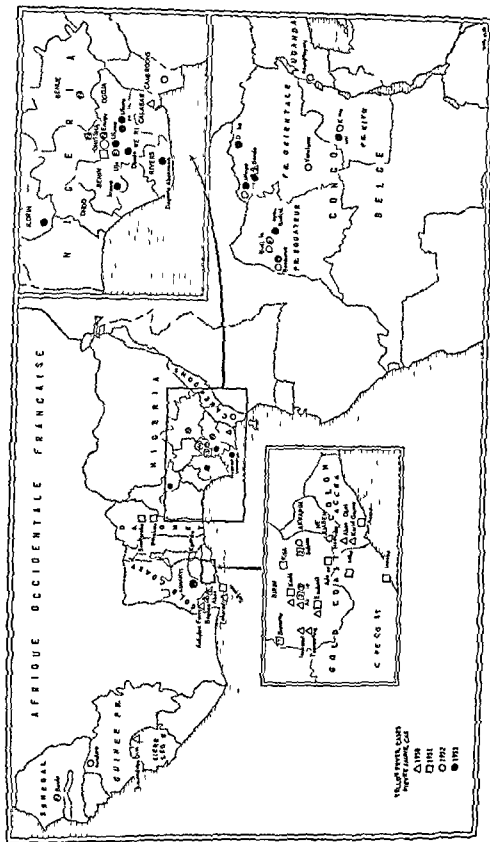
Epidemiology

Until 1932 it was believed that man was the only susceptible vertebrate host of yellow fever and that the mosquito *Aedes aegypti* was the sole vector. Control efforts were concentrated on the elimination of the vector and many urban epidemics were checked by this means. Eradication of *A. aegypti* became the goal of systematic campaigns in the Americas and these campaigns met with considerable success in cities in the known endemic regions. However, complete eradication of the disease from the continent was not achieved, partly because of an epidemiological factor which had not been previously recognized. An outbreak of yellow fever in an area in Brazil in which there were no *A. aegypti* led Soper and his colleagues to the discovery of jungle yellow fever, a form which can persist in sparsely populated or even uninhabited forest areas, be maintained in animals other than man and be transmitted by vectors other than *A. aegypti*.

Concurrent advances in knowledge of yellow fever were being made in Africa. In 1927 it was demonstrated that the rhesus monkey is highly susceptible to infection with yellow fever and this finding of a satisfactory experimental animal opened the door to

Bull. W.H.O. 11: 315-308, 1954. See particularly article by A. F. M. Hall. The Yellow Fever Situation in Africa in which much of the information in the present review is drawn.

FIG 1 DISTRIBUTION OF YELLOW FEVER CASES NOTIFIED IN AFRICA FROM 1950 TO 1953



YELLOW FEVER CASES
NOTIFIED IN AFRICA, 1950-1953

important laboratory studies. Among the significant results of these studies were the elaboration of a sero-protection test which made possible the demonstration of the long immunity possessed by an individual who has recovered from yellow fever and the development of a vaccine which has since effectively immunized millions of persons against the disease.

The sero-protection test became increasingly useful when it began to be employed in immunity surveys to determine the extent to which areas had been infected by yellow fever and to obtain a more accurate appraisal of the actual incidence of the disease. In early immunity surveys in West Africa the tests were made in rhesus monkeys and this necessarily limited the extent to which they could be carried out. With the development of a similar test using the white mouse as the experimental animal large scale studies became possible.

Extensive immunity surveys in some of which WHO aid was given have helped to delineate the areas in Africa where yellow fever virus has been present including areas in which clinical cases have not been recognized.

Much valuable information on the epidemiological nature of yellow fever in Africa has been gained through investigations conducted by the Yellow Fever Institute at Entebbe, Uganda. It has been revealed by these investigations for example that, in addition to *A. aegypti*, *A. simpsoni* and *A. africanus* are responsible for the transmission of the virus to man and to monkeys and that there exists in Africa a jungle yellow fever basically the same as that found in the Western hemisphere.

A recent study of the prevalence and distribution of yellow fever in Africa since about 1940² indicates that classic yellow fever of the epidemic urban type transmitted by *A.*

aegypti has to all intents and purposes been non-existent in Africa for several years; the majority of the rare cases found occurring in rural areas in or near the forest. The data presented are based on notifications of cases and deaths in various territories and on immunity tests carried out in Africa in recent years particularly those effected under the auspices of WHO from 1951 to 1953. It must be noted however that the results of these immunity tests are difficult to evaluate in some areas since the surveys may have included some vaccinated subjects. Figures 1-3 illustrate the distribution of cases of yellow fever from 1940 to 1953 and the results of sera protection tests carried out in surveys from 1951 to 1953.

In summary yellow fever presents two different epidemiological pictures: one is a disease of man occurring in urban centres and transmitted by the domestic mosquito *A. aegypti*; the other is primarily a disease of animals found in association with forests and transmitted by forest-dwelling vectors. The disease itself however is the same regardless of the environment in which it occurs. It is now believed that the original source of infection might have been the jungle and that it was from there that yellow fever invaded and still invades urban centres from time to time. Thus means that the permanent reservoir of virus which exists in forest animals represents a constant potential threat of infection whether or not the disease has been successfully eliminated from urban centres.

Although much is now known concerning the epidemiology of yellow fever there is still more to be learned particularly with regard to the possibilities of other vectors and other animal hosts, reservoirs of the disease.

Control

The object of epidemiological study of yellow fever is of course the control of the

² See B. Inel, P. H. & Deu schman, Z. (1954) La 6 vre
jaune d'Afrique cours des néces écentes Bull. Wld
Hlth Org. 11: 325

FIG 1 DISTRIBUTION OF YELLOW FEVER CASES NOTIFIED IN AFRICA FROM 1950 TO 1953

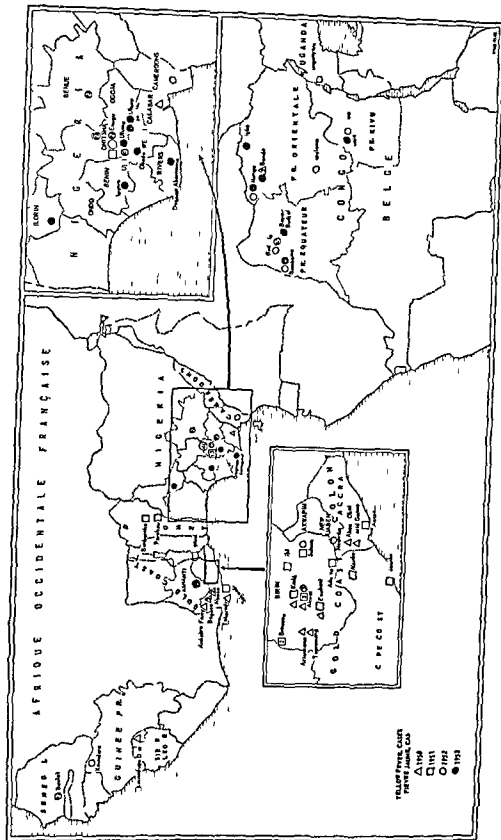
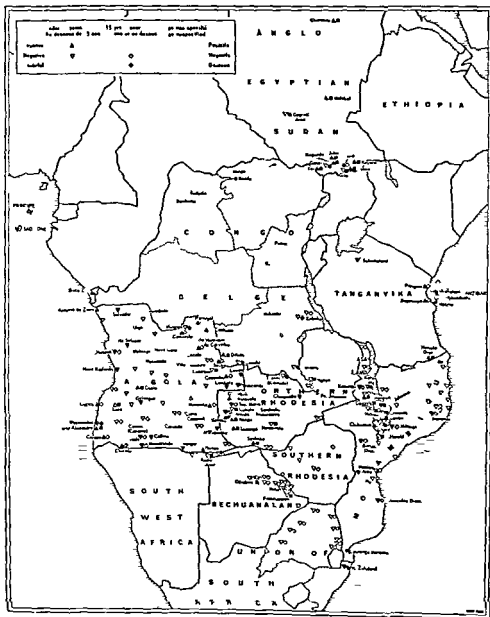


FIG 3 YELLOW FEVER IMMUNITY TESTS CARRIED OUT WITH HUMAN SERA FROM 1951 TO 1953



AFRICAN CONFERENCE ON ONCHOCERCIASIS

Onchocerciasis the filarial disease transmitted by the bite of the fly *Simulium* is increasingly drawing the attention of WHO. Early in 1954 an expert committee reviewed present knowledge of the disease discussed methods for its control and drew up standardized procedures for epidemiological surveys (see page 353). In October a WHO-sponsored conference on onchocerciasis brought together in Leopoldville (Belgian Congo) 30 delegates from Africa, the Americas and Europe. These meetings marked an important advance in the struggle against a disease which especially because of the blindness which often results from it has serious social and economic consequences in areas where it is widespread.

Discussions at the African conference revealed the extent of the problem in that continent furnished much technical information concerning the manifestations and treatment of the disease and underlined the need for large scale co-operative efforts to combat it. It was reported for example that

in certain places in Nigeria 77% of those afflicted with onchocerciasis have palpable nodules and 44% have ocular complications.

in Northern Nigeria the disease has caused yearly economic losses amounting to £120 000.

in one locality in Chad French Equatorial Africa an exodus of the population because of the disease resulted in a population decrease of from 40 000 to 6 000.

in Uganda people were bitten as frequently as 200 times an hour by simuliids and literally fled from certain areas returning only after insecticides had been used.

in some regions onchocerciasis has been responsible for population migrations as great as those caused by sleeping sickness.

Onchocerciasis does not appear to be at all

prevalent in Rhodesia Basutoland Somalia or Swaziland. Madagascar seems to be completely free of the disease. It has been noted in the Sudan that fishermen living near rivers are more frequently stricken than other population groups and the disease is sometimes referred to as "river blindness". One study suggests that the disease extends farther south on the continent of Africa than had been thought. There is a great need to map in detail the principal foci of onchocerciasis in Africa so that measures may be taken to prevent its introduction into territories which are as yet relatively untouched.

An interesting point was raised at the conference concerning the prevalence of onchocerciasis in regions which have been deforested and cleared to make way for coffee or rubber plantations especially in regard to imported labourers. Alternating coffee bushes with trees to give them shade creates a freshness of atmosphere that is most conducive to both the activity and the settling of *Simulium* vectors of the parasite *Onchocerca*.

Some of the papers presented at the conference drew attention to a possible relationship between nutrition and the ocular lesions associated with *Onchocerca* infections. People who have a balanced diet seem to be less subject to these complications. Malnutrition and the resulting avitaminoses were considered in connexion with so-called "night blindness" which is more frequently observed in onchocerciasis patients at the end of the dry season. There was general agreement that certain native products such as palm oil and millet beer could to some extent make up for a lack of other sources of vitamins A and B. It was suggested that general improvement in living conditions would do much to increase the resistance of those attacked by *Onchocerca* infection.

disease and the prevention of its spread to non infected areas *A. aegypti* transmitted yellow fever is potentially the most important factor in the spread of the disease. The method of control of this type of yellow fever—destruction of the vector—has not changed since it was first recommended by Dr Reed but the means of eliminating *A. aegypti* have greatly improved. In early control efforts (e.g. in Brazil in the early 1930's) kerosene was used. Since 1947, DDT has been employed in *A. aegypti* eradication schemes with great success in most countries in South and Central America where the spraying has often served the dual purpose of eliminating vectors of malaria as well.

Jungle, or sylvan, yellow fever requires other methods, since control of the forest vectors or of the animal hosts is not possible at present. By means of vaccination, it is possible to protect the human populations exposed to the forest infection. It is now officially recognized that this vaccination gives immunity for six years and there is evidence that the immunity may be of longer duration, lasting perhaps throughout life, as does the immunity gained by a non fatal attack of the disease. Yellow fever inoculation is as simple as vaccination against smallpox and has, in fact, often been combined with the latter in immunization campaigns in Africa. Mass vaccination of the population in endemic yellow fever areas is advisable, and has been undertaken in most territories of western and central Africa.

Successful control of yellow fever has been achieved in parts of Africa. A notable illustration of the efficacy of prophylaxis is the experience in the Cape Verde Peninsula.³ Following an epidemic of yellow fever in 1927 (94 cases and 66 deaths) an intensive

campaign against the vector *A. aegypti* was initiated. Precise regulations were established, a programme of environmental sanitation undertaken, and preventive measures adopted including a weekly search for and destruction of temporary larval breeding places, surveillance and treatment with insecticides of permanent breeding places, and the enforcement of special protective measures in the Dakar Yoff airport sector and in the sanitary zone of the port of Dakar. In 1934 vaccination against yellow fever began and, with the introduction in 1939 of the scarification method, was instituted on a large scale. In fourteen years the 200,000 inhabitants of the Cape Verde Peninsula received 404,226 yellow fever vaccinations, either simple or combined with smallpox vaccination. Since the beginning of mass vaccination, the immunity conferred by this method has varied between 100% one year after vaccination and 80% seven years after. No case of yellow fever has been registered in the Peninsula since the 1927 epidemic and the disease is not endemic there—a fact which bears witness to the effectiveness of adequate preventive measures.

Despite the advances in methods of controlling yellow fever, some quarantine measures are still considered necessary. It is for this reason that yellow fever is one of the most important diseases in the International Sanitary Regulations. However, under conditions such as exist in Africa, quarantine is inadequate as a method of control, since most of the cases actually occurring go unrecognized and unnotified, and obviously, quarantine measures cannot be applied against a disease if its presence is not noted. The practical solution to the problem of yellow fever in Africa, as in America, therefore lies in the eradication of the urban vector and in the mass immunization of the population at risk.

See Breteau H. (1954) "La fièvre jaune en Afrique Occidentale Française. Un aspect de la médecine préventive mass" in Bull. Wild. Hlth. Org. 11: 453.

TREPONEMATOSES CONTROL IN THAILAND*

Thailand has an area of 511 937 km² and a population of about 17.5 million. The climate is largely tropical. Approximately 85% of the population are engaged in agriculture particularly in rice cultivation. In rural areas conditions are very primitive and communications rudimentary.

BEGINNING AND OBJECTIVES OF THE CAMPAIGN

The first discussions concerning the treponematoses-control programme now in progress in Thailand took place towards the end of 1949 when at the request of the Government a WHO consultant made a survey of the problem. At the same time teams were sent to some of the provinces. As a result of this preliminary survey the Ministry of Public Health submitted proposals for a programme which was subsequently approved by WHO on 21 April 1950. UNICEF agreed to allocate funds for equipment and supplies and operations began in May 1950.

It was soon apparent that the actual prevalence of yaws was much greater than had been originally estimated: the average being 13% and even higher in some areas. It was found that about 60% of the inhabitants lived in yaws infected areas and that there were approximately 1.4 million cases of the disease.

The Government therefore proposed an expansion of the programme. WHO's technical approval was obtained and UNICEF allocated additional funds. WHO agreed to provide the international consultants and UNICEF the equipment and supplies.

The objectives of the campaign were (1) to carry out a systematic campaign against yaws in all infected areas (i.e. up to forty provinces with a total population of about 10.5 million); (2) to examine and re-examine the population in these areas to treat all persons suffering from yaws and to administer prophylaxis to all their contacts; (3) to reduce the reservoir of infection to a level at which it would no longer be a public health problem and could be controlled by the rural health authorities; (4) to train local personnel in methods of diagnosis, treatment and control of yaws in the administration of a mass campaign and in general public health measures directed towards the improvement of rural health standards; and (5) to integrate the control of yaws into the permanent public health services of the country when the mass-campaign stage had been consolidated, planning this integration so that it would meet the local conditions and permit the maintenance of control without further international aid.

TRAINING OF PERSONNEL

To train local personnel for working with international team members and for later replacing them a basic course was organized for sanitary inspectors, nurses and other personnel with the adequate prerequisite education. This training consists of two weeks of theory and classroom demonstrations followed by six weeks of field demonstrations including house-to-house surveys, diagnosis, treatment, resurveys and the keeping of case cards, records and reports. After this the trainees are moved to an area where they work for eight weeks under the supervision of more experienced field work.

*From report prepared by Dr. E. I. G. in WHO Seminar. Advised the project from July 1953 to January 1954. Additional information has been included to bring it up to date. The project is to continue to be dated of 1956.

Attention was focused on the apparent analogy between the ocular lesions caused by onchocerciasis and those caused by other diseases such as leprosy, sleeping sickness, malaria, and syphilis, emphasizing the necessity for making a precise differential diagnosis, especially in a continent where the inhabitants are often suffering from several diseases at a time. It was pointed out too, that simuliids are often found in the same areas as tse tse flies, which are the vectors of sleeping sickness.

The parasite *Onchocerca volvulus* and the vector *Simulium damnosum* were discussed in detail. The life of the adult parasite has been estimated by scientists to be from 15 to 20 years, from the moment it is introduced into the skin of the human host to the moment it dies.

The flight range of the vectors is difficult to determine. Some authorities have given figures of from 11 to 20 km but marked flies have been found as far as 70 km from their resting place. However, it is possible that they were transported this distance by vehicles which points out still another potential source of danger in the transmission of the disease.

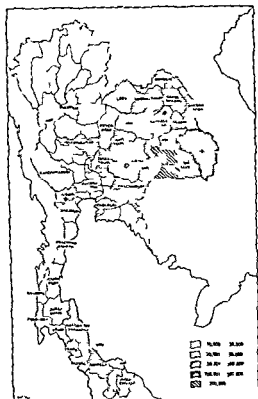
The question of possible animal reservoirs of *Onchocerca* infection was considered. There is evidence that simuliids attack cattle and other domestic animals, but further studies on this subject are required before any conclusions can be reached.

Control was discussed from the viewpoints of vector destruction, mass treatment and a combination of the two. Control campaigns may be costly but, in general, efforts directed only against the larvae of the flies are much less expensive (in a proportion of 1 to 300) than large scale operations against the adult insect which require much more complicated means, such as helicopters for aerial spraying. There is hope that larvicidal measures may suffice to eliminate the disease, at least from certain regions. Noteworthy progress has been realized in some territories of Africa—e.g., Belgian Congo, Kenya and Uganda—particularly in the control of the vector.

Advances in therapy are also encouraging. Important developments are anticipated in the study of the ophthalmological aspects of onchocerciasis, and it is believed that these may lead to more effective control of the infection, especially of the ocular manifestations which can result in blindness.

Participants in the African conference laid plans for inter governmental action against onchocerciasis, made proposals for international research, and suggested that special training courses and fellowships be arranged for study of the disease. A plea was made for large scale efforts for the prevention and the early treatment of the disease with possible assistance to governments from international agencies so that thousands of African children may escape blindness.

FIG. 1 ESTIMATED NUMBER OF CASES OF YAWS IN THAILAND AND STATUS OF THE CONTROL PROJECT IN NOVEMBER 1953



- Survey in progress or planned
- Resurvey
- Survey and resurvey in progress
- Survey and resurvey completed
- Survey and control work in progress

The following figures give an idea of the extent of the campaign activities from 1950 to June 1954

Population covered	4 145 907
Number of persons examined	3 585 292
Percentage of population examined	86.5
Number of persons treated	441,256
Percentage treated of population examined	12.3

The prevalence rate of yaws varies considerably according to the place the highest

prevalence rate has been observed in the province of Surin where it ranges from 27% to 49% of the population examined

Resurveys made in July 1952 and June 1954 have indicated a marked drop in the prevalence of yaws

Population covered	1 850,295
Number of persons examined	1 649 764
Percentage of population examined	89.2
Number of persons treated	64 875
Percentage treated of population examined	3.9

In the province of Surin two research projects were carried out one a control study of treatment with benzathine penicillin G¹ in Gaeyai village beginning in April 1953 and the other a programme for the treatment of the whole population cases of yaws receiving full treatment with PAM and the rest of the population being considered as contacts and being given half the dosage used for treatment. In the same area a mass serological investigation was also conducted to obtain exact information on the prevalence of yaws

RESULTS OF THE CAMPAIGN

Epidemiological and clinical observations

The distribution of yaws in Thailand is uneven and patchy even within the same province where living conditions are more or less the same the prevalence of yaws in different districts has been found to range from 4.3% to 17.1% of the population

The onset of yaws occurs in most instances before the age of 15 and this epidemiological characteristic is the same in all areas whatever the degree of infection

The majority of those infected are in the latent stage of yaws and can be detected only by serological examination

Yaws is a family disease often transmitted from children to mother or vice versa

¹ N. dike zyl thylén d am e d penicill G

ers Finally, following assessment of their work by the instructors they are assigned as team members

Short training courses have been given in a number of provinces to prepare sanitary inspectors from health centres for the consolidation phase of the yaws programme In addition, special courses have been arranged for public health nurses partly in connexion with a WHO/Government sponsored training course for nurse midwives The purpose is to prepare these nurses for field activities related to the yaws control campaign such as search for contacts follow up of patients who have received treatment and collaboration with the teams in mass campaigns by visiting homes and schools, giving advice to mothers, and aiding in health education By December 1953 15 public health nurses were ready to take part in the campaign

A training laboratory was established at Rajburi the project headquarters, with equipment supplied by UNICEF Here local personnel are trained in serological methods This laboratory is run by a WHO serologist, a national serologist and a national laboratory technician In 1950, two Thai doctors received training, in 1950 and 1951 nine sanitary inspectors were trained for laboratory work

Other laboratories have subsequently been established in other towns—Nakornrajsima Amnachaeron, Udornthani, and Songkla In October 1953, a trial, portable field laboratory was set up in Surindr, further utilization of such laboratories is envisaged

The serological techniques used and taught in the campaign laboratories are the VDRL slide flocculation test and the standard Kahn test In addition Meinicke, Kline, and complement fixation tests have been carried out in one or more of the laboratories Demonstrations and training in the estimation of penicillin blood levels have also been given

CAMPAIGN ACTIVITIES

The teams composed of five or six persons, travel in jeeps and stay overnight in the village or hamlet in which work is to begin on the following day The team leader examines the inhabitants and makes the diagnosis Treatment is administered to those found to be infected with yaws and to their contacts All persons living in the same house as a patient with infectious yaws are considered contacts At the beginning of the campaign, one day was devoted to the examinations and another to treatment but later it was decided to carry out both operations on the same day in order to avoid the possibility of diagnosed cases escaping treatment

Yaws is not the only public health problem in the areas visited The teams have discovered numerous cases of malaria, intestinal diseases anaemia, and other ailments This has been brought to the attention of UNICEF, which is assisting by providing drugs that can be given to patients by the yaws control teams This additional service has increased the number of persons who come for examinations for yaws and facilitates acceptance of the teams in rural areas

PAM (procaine penicillin G with aluminium monostearate) is used for the treatment of all types of yaws Up to October 1952, two injections with an interval of three days between them were given The dosages were 4 ml for those over 10 years of age 2 ml for those from 2 to 10 years, and 1 ml for those under 2 years Later, in accordance with the recommendations of the WHO Expert Committee on Venereal Infections and Treponematoses at its fourth session the same amounts were administered in a single injection Since the end of 1953, the dose for patients up to 10 years of age has been increased and the treatment schedule is as follows

Age group	Cases of yaws	Contacts
Over 10 years	4 ml	2 ml
2-10 years	3 ml	1.5 ml
Under 2 years	2 ml	1 ml

FIG 1 ESTIMATED NUMBER OF CASES OF YAWS IN THAILAND AND STATUS OF THE CONTROL PROJECT IN NOVEMBER 1953



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Yaws is a family disease often transmitted from children to mother or vice versa

¹ N. dibenzylethylenediamine of penicillin G

Assessment of the surveys

The coverage of the population has been adequate reaching an average of 85% to 90% or more. However the coverage of those infected has been less satisfactory. Often history and clinical examination fail to reveal cases which can be detected only by serological tests, and sometimes the teams lack means for making serological diagnosis. It is estimated that for these reasons about 20% of the infected population in the latent stage of the disease have remained undiagnosed and therefore untreated. This group is important as a reservoir of the disease for clinical manifestations may appear at any time in the natural course of the disease. This is proved by the fact that resurvey has revealed a relatively large number of clinical cases of yaws in addition to the new infections found among persons who at the time of the original survey were found to be non infected. This group of undetected cases which are apt to become contagious, in addition to those who were not examined and those who missed treatment constitutes a reservoir of yaws, after a survey which might be capable of producing in time a situation probably little different from that at the start of the campaign.

In order to simplify operations and make mass serological examinations unnecessary treatment of the whole population of the more highly infected areas is being considered. This system is already under study (see page 351) and has been introduced on a limited basis to gain more experience of its practicability and efficacy.

At the request of the Government the possibility of reducing the area of operations for resurvey in certain cases was studied. Personnel, always in short supply and becoming more and more essential, would thus be available for expanding the campaign so as to cover larger areas in the initial surveys. The cases in which resurvey might

be postponed have been defined in terms of the percentage of the population examined in the first survey, and of the percentage of cases of infectious yaws found among those examined.

Clinical and serological results

Whether PAM is administered in one or two injections, the results are the same. Clinical cure or clinical improvement is noted in more than 90% of the cases treated. And the serological results are identical regardless of whether the PAM is given in one or several injections.

A serological study followed up to the end of one year after treatment showed that reversal to seronegativity could be expected in only a small percentage of cases—11.4% in the series observed. The best serological response was seen in cases of primary lesions in cases of palmar or plantar hyperkeratosis or in latent cases. In Thailand after the treatment with PAM as described, return to seronegativity was never observed when the original titre was above 1:64.

Results of treatment with benzathine penicillin G

The effects of treatment with benzathine penicillin G (see page 351) as evaluated six months after its administration may be summarized as follows:

(1) The by effects—pain and swelling at the site of injection—disappeared rapidly in two to five days.

(2) In cases of initial lesions and multiple papillomata benzathine penicillin G, like PAM gave complete healing of the lesions. It appeared however that the scars in patients treated with benzathine penicillin G were softer and smoother than those seen after PAM treatment.

¹ For further information on trials with benzathine penicillin G see article by E. I. Grin and others in *Amer. J. Syph.* 1954 38: 397.

(3) In patients with plantar or palmar hyperkeratoses benzathine penicillin G (dose 4 ml) resulted in the disappearance of all signs of hyperkeratosis including pain and difficulties in walking. In a corresponding group of hyperkeratosis cases in the same hamlet treated with PAM (dose 6 ml) the results were not so well

marked and a certain number of patients had to be re-treated. Benzathine penicillin G (dose 2 ml) was used for the re-treatment.

(4) In cases serologically controlled no appreciable difference could be observed in the results given by benzathine penicillin G and those given by PAM.

Reports of Expert Groups

ONCHOCERCIASIS

Epidemiological surveys of onchocerciasis in Africa and in the Americas have shown that *Onchocerca* infections afflict a high proportion of the population of certain regions. Infection rates up to 80/100% have been recorded in both continents.

The social significance of the disease in many areas is considerable because of the frequent ocular complications and their effect on the working capacity of those suffering therefrom. It has been demonstrated that in some places in the Americas blindness may reach the proportions of 0.45% to 3.3% of the total population—even 15.6% in Guatemala in 1933. The economic consequences may be expressed in terms of abandonment of land and villages or of impeding the carrying out of plans for economic developments such as the establishment of power plants. In certain districts of Mexico and Guatemala coffee planters have been obliged to give special attention to the disease and often to allocate considerable funds for the treatment of their workers.

A general review of present knowledge of *Onchocerca* infections and their control is given in the first report of the WHO Expert Committee on Onchocerciasis¹. This report also makes a valuable contribution to the

study and control of the disease by setting forth for the first time standardized techniques to be followed in conducting epidemiological surveys. Standardization of survey procedures would make possible the comparison of results of investigations undertaken in different parts of the world at different times and would greatly facilitate the evaluation of control measures.

SYMPTOMS AND PATHOLOGY

The report begins with a description of the symptoms and pathology of onchocerciasis pointing out differences in the disease observed in Africa and in the Americas. Among these differences are the presence of pruritus as a common symptom in Africa and its rarity in America; the frequency of nodules on the head and trunk in Guatemala and Mexico in contrast with their more common appearance on the pelvic girdle and the lower limbs in Africa; a greater number of microfilariae in lymphatic glands in African patients than in American patients; and the observation of chorioido-retinitis and primary optic atrophy in Africa although it has not been seen in America by many ophthalmologists with experience in onchocerciasis.

Most important are the ocular symptoms which include frequent conjunctivitis and

filarial limbitis superficial subepithelial punctate keratitis (also frequent) interstitial keratitis (less frequent) and a characteristic iridocyclitis which is often seen and which is the chief cause of blindness. The evolution of the lesions tends to be slow with a gradual deterioration of the eyesight in untreated patients over a period of years.

The causation of all the symptoms of the disease depends largely on repeated heavy infections with *Onchocerca*, and symptoms are most common and most severe in places where infection is heaviest.

VECTORS

The chief vectors of *Onchocerca* are *Simulium ochraceum* in Mexico and in Guatemala, and *S. damnosum* in Africa. Other vectors of some importance in parts of East Africa are those belonging to the species complex *S. naevet*. The report gives considerable information on the bionomics of these vectors. Thus far there is no evidence of an animal reservoir of onchocerciasis in either the Americas or in Africa.

EPIDEMIOLOGICAL SURVEYS

There is a need for epidemiological surveys of onchocerciasis, and the report suggests certain methods for the standardization of such surveys.

Diagnosis

Diagnosis should include careful palpation of the whole body for nodules and biopsy or scarification of the skin for the detection of microfilariae. Particular attention should be paid to the diagnosis and evaluation of ocular symptoms which present a difficult problem during epidemiological surveys. Trained non-specialized personnel may do the preliminary work such as determination of visual acuity and examination of the anterior segment of the bulb with hand lens but the examination should be completed by a specialist with the aid of an ophthal-

moscope. The following points are listed as being most important in the diagnosis.

1. Conjunctivitis and limbitis of filarial origin should not be confused with trachomatous pannus or with vernal conjunctivitis.

2. Keratitis should be distinguished from kerato conjunctivitis.

3. Iridocyclitis can easily be recognized in some cases by the deformation of the pupil and its downward displacement, synechia and occlusion of the pupil, atrophy of the iris, etc.

4. Choroido-retinitis can be recognized by the extension and the great variety of its lesions (atrophic and pigmented lesions, exudative lesions, oedema of the retina and others).

5. Optic atrophy in Africa is characterized in the majority of cases by perivascular sheaths which are often very marked and which transform the nerve into a cord of fibrous aspect.

Another diagnostic procedure is the detection of microfilariae in the eye. Microfilariae may be found by biomicroscope or electric ophthalmoscope in the cornea, the anterior chamber and the vitreous. Microscopic examination of the aqueous humour and of fragments of the conjunctiva may be of assistance in the diagnosis.

While cutaneous reactions using filarial antigens are not recommended for epidemiological surveys (because of the non-specificity of the tests), systemic allergic reactions may be useful as diagnostic procedures. Fifty milligrammes of diethyl carbamazone are administered orally and the reaction is considered positive if a patient suffers pruritus or shows allergic reactions of the skin, conjunctiva or lymphatic glands a short time after taking the drug.

Collection and evaluation of data

The report outlines the data which should be collected and evaluated in epidemiological surveys of onchocerciasis with regard both to man and to the vectors of the disease. It is suggested that the data on cases of the disease be classified in the following age

groups 12 3-4 5-9 10-15 16-30 31-50
and over 50

CONTROL

Control of onchocerciasis is reviewed under two headings therapy and vector control

Therapy

"Denodulization" which does not seem to reduce the incidence of the disease but which does reduce the incidence of eye lesions and blindness now appears to be the most practical measure for the treatment of individuals and should be employed wherever possible both for individual cases and in mass treatment campaigns

The recommended drug therapy for individual patients is the use of diethyl carbamazine in a dosage of 2 mg per kilo of body weight three times a day for a period of two or three weeks. In rural areas the dosage may consist of 10 mg per kilo in a single daily dose for one week. Although allergic reactions follow the administration of this drug they should not be considered a contra indication to its use. Repetition of treatment every six months gives good results and allergic reactions steadily decrease. However the use of diethyl carbamazine is not recommended for mass treatment because of the allergic reactions and because it does not prevent reappearance of microfilariae

Suramin sodium another drug sometimes used for treating onchocerciasis has been considered by the experts as too dangerous to be recommended for use in mass treatment and is recommended for individual treatment with reserve since it should be employed only under careful and constant medical supervision

Vector control

No method of control of simuliids is universally applicable the choice of chemical

biological and mechanical methods depending on local conditions. A detailed entomological survey should be made the water-courses of the area mapped, and a study of the aquatic environment in relation to breeding of the vector undertaken. DDT and other insecticides have been used successfully in the control of *Simulium* breeding. For total eradication all streams and rivers of an area must be treated within a period of about ten days in order to prevent reinfestation from outside the process being repeated until the maximum lifetime of a female fly has expired. In certain areas of Africa good results have been obtained by the use of imagocides dispensed from aircraft. Other control methods are the use of biological predators and parasites against the aquatic stages of the simuliids and water control—through mechanical means such as dams syphons and concrete channels—to kill the early stages of the *Simulium* or to modify the breeding conditions

Recommended control methods

More study is needed on all of these control methods. In the present stage of knowledge two courses of action are recommended the control of the vector wherever this is feasible and the systematic excision of nodules from patients in areas of high endemicity. In some areas it may be advisable to use a combination of the different control methods available

RESEARCH

In addition to detailed surveys for determining the geographical distribution of onchocerciasis in Africa and in America and for studying the epidemiological features of the disease on the two continents there is a great need for research on problems relative to the human host, the vector and the parasite. The WHO report suggests subjects for such research, thus pointing the way to further advances in knowledge of the disease as well as summarizing what is now known of its nature cause and control

BILHARZIA SNAIL VECTORS

Identification and Classification

Equatorial and South Africa

One of the most difficult problems in the study of bilharziasis is the identification of the snail vectors of the disease. There is much confusion regarding the status of many species of snail vectors and a need to establish criteria to enable the field worker to make a primary identification and the malacologist to reach a definite identification and classification. The molluscan family Planorbidae, to which the snail vectors of *Schistosoma* belong is large, and numbers of species have evolved, with representatives present throughout the world. Most of these species lack easily recognizable characters or ornamentation that would aid in identification. In addition many of the descriptions of species have been based only on shell characters, no information concerning the anatomy of the animal being given.

A recent WHO technical report¹ attempts to throw light on this problem. The work of a special WHO study group, the report sets forth principles of classification and criteria for the identification of snail vectors of bilharziasis, particularly for African Planorbidae, specifies the data which should accompany all snail collections sent for identification, and describes acceptable

methods for the preservation of vector molluscs. It contains a tentative list of various African species of *Biomphalaria* which may be helpful to field workers, although the classification given is not to be considered as final.

The report calls attention to the fact that much research remains to be done in medical and veterinary malacology. Most important are the contributions of field workers who should send material to malacologists for study. Assistance in the compilation of a file of the original descriptions of molluscs which are intermediate hosts of bilharziasis and of their close relatives is requested, priority to be accorded to study of Planorbidae (*Biomphalaria* and *Bulinus*) from Africa, the Mediterranean region and South America in that order. The descriptions should be accompanied by photographs of the type species.

Information on seasonal infection of snail hosts is also sought. Other subjects on which research is essential are outlined in the report. It is emphasized that further advances in the study of snail vectors will require the collaboration of malacologists, parasitologists, ecologists, and limnologists and close co-operation between field workers, national research institutes and international reference institutes.

¹ *Wild Hlth O g techn R p Ser* 1954 90 22 pages Price 1/9 \$0.25 or Sw fr 1.— Published in English and in French

World Health Day 7 April 1955

Announcement has been made in a circular letter from the Director General to Member States of plans for the observance of World Health Day in 1955. The theme is to be "Clean water means better health," a subject which emphasizes WHO's role in improving environmental sanitation and which calls attention to a problem of concern to health authorities in many countries.

World Health Day is "primarily an occasion for national activity in favour of national health programmes [its] international character serving principally to strengthen its national appeal." It is hoped that all governments will organize an even wider observance of World Health Day in 1955 than in previous years.

Notes and News

Regional Committee for Africa

The fourth session of the WHO Regional Committee for Africa was held in Leopoldville Belgian Congo from 20 to 25 September 1954. The session was attended by representatives of nine Member States and Associate Members¹ who reviewed the report of the Regional Director Dr F J C Cambronnac on activities in the Region and discussed the programme and budget for the years 1955 and 1956.

During the period covered by the Regional Director's report a number of projects for the control of communicable diseases malaria and yaws in particular were initiated or planned. Nutrition maternal and child health and environmental sanitation also received attention. Much of the work was being undertaken in co-operation with UNICEF and other agencies especially the Commission for Technical Co-operation in Africa South of the Sahara (CCTA) in assisting the governments concerned.

Among the decisions of the committee was one relating to strengthening the collaboration between WHO and the CCTA. A warm vote of thanks was extended to the French Government for its generosity in offering to arrange the installation of the Regional Office and of accommodation for the personnel in the Cité du Djoué which is situated on a hill overlooking the Congo River a few miles from Brazzaville.

Technical discussions on the subject of public health problems in rural areas in Africa were held in conjunction with the committee's meeting. It was decided that the topic of similar discussions at the fifth session would be "The health problems of

the pre school child in Africa and the role of the public health nurse in the solution of these problems."

Chairman of the fourth session of the Regional Committee for Africa was Colonel A C Thomas Director General of Medical Services Belgian Congo. Dr R M Morris (Federation of Rhodesia and Nyasaland) and Dr J B Titus (Liberia) served as Vice Chairmen.

The next session of the committee is to take place in Tananarive Madagascar and the 1956 session in Luanda Angola.

Regional Committee for the Eastern Mediterranean Subcommittee A

In late September 1954 a committee designated as Subcommittee A composed of all but one of the countries of the Eastern Mediterranean Region met for the first time since 1950 to discuss regional activities and to consider the programme and budget proposed by the Regional Director.

The report of the Regional Director which was reviewed by the subcommittee covered four years of activity in the Region and recorded notable progress when the Regional Committee for the Eastern Mediterranean met in Istanbul in 1950 the emphasis was on surveys of health needs and only six projects were operating. Since then, 40 projects have been completed, and there are more than 57 currently in operation with 12 more expected to be under way very soon. Field staff has increased accordingly at the end of 1951 it numbered 49 and by the fall of 1954 it was 131 the largest group (44) working in tuberculosis control. The report emphasized the value of the experience and

¹Members: Belgium, France, Liberia, Portugal, Spain, United Kingdom of Great Britain and Northern Ireland, and Union of South Africa. Associate Members: Federal of Rhodesia and Nyasaland, and Spanish Protectorate Zone in Morocco.

Egypt, Ethiopia, France, Iran, Iraq, Italy, Jordan, Lebanon, Libya, Pakistan, Saudi Arabia, Syria, the United Kingdom of Great Britain and Northern Ireland, and Yemen.

information which had been gained in the period under review and called attention to continuing needs especially the need for trained health personnel

The subcommittee elected Dr Mohamed H Abul Ela Under Secretary of State Ministry of Public Health Egypt as Chairman and Dr Sabih Al Wahbi (Iraq) and Dr A T Diba (Iran) as Vice Chairmen. The representatives of the various countries commented on and approved, the Regional Director's report and supplied additional information on the activities within their own countries

A budget of \$4 042 030 (including funds from Technical Assistance, UNICEF and other sources) was considered for work in 15 countries. This budget is to cover the expenses of a programme which includes control of malaria and other insect borne diseases, tuberculosis bilharziasis trachoma and venereal diseases improvement of public health nursing occupational health and mental health services the health care of mothers and children, nutrition environmental sanitation, and education and training activities including the award of fellowships. In the discussions of the programme particular attention was given to environmental sanitation and to smallpox control. The former was stated to be one of the first essentials in countries of the Region and the opinion was expressed that without improvement of environmental sanitation most other public health measures would be to no avail. With regard to smallpox WHO was requested to provide data on dry vaccines and to help in the preparation of national and inter-country smallpox vaccination campaigns. A representative of Egypt reported that, thanks to the application of modern control methods, the incidence of smallpox in his country had dropped from 1 857 in 1945 to a complete absence of the disease since 1952.

Governments of the Region were asked to look far ahead in planning their health programmes and to co ordinate the work of all the ministries whose activities have a bearing on health and general welfare. It was recommended that programmes cover

five to ten years so that the best use might be made of international funds and to be made

Subcommittee B has not yet been asked to meet

Regional Committee for the Americas

The Fourteenth Pan American Sanitary Conference was held in Santiago, Chile, from 7 to 22 October. The Conference meets every four years served as the 14th session of the WHO Regional Committee for the Americas.

Represented at the Conference were 19 Member States and three European governments with territories in the Americas. For the first time all presented four year reports including available health statistics, on health conditions and on the progress achieved in their territories since the last meeting. Two reports of the Director, F L Soper, covered 1953 and also the four year period. The latter revealed a considerable expansion of public health work in the Region at the beginning of 1950 the American Sanitary Bureau (Regional for the Americas) was assisting in ten provinces. By the end of 1953 more than one hundred health programmes were receiving PASB assistance. It also showed a broadening of the scope of public health activities in the Americas at a point where hemisphere wide eradication projects were being undertaken.

The Conference was presided over by Dr Sergio Altamirano, Minister of Public Health and Welfare of Chile. Dr W Pa Dearing (USA) and Dr O Vargas M (Costa Rica) were Vice Chairmen. The Conference re-elected Dr Soper as Director of the Pan American Sanitary Bureau to a third four year term beginning 1 January 1955.

A programme embracing nearly one hundred projects and a budget of \$2 100 000 were approved for 1955, and a similar budget

* Argentina Bolivia Brazil Chile Colombia Costa Rica Cuba Dominican Republic Ecuador El Salvador Guatemala Haiti Mexico Netherlands Nicaragua Paraguay Peru United Kingdom of Great Britain and Northern Ireland United States of America Uruguay and Venezuela

1956 endorsed A WHO regional budget \$1 58 255 was approved for transmission the Director General for his consideration preparing the WHO budget for 1956 particular attention was given to and special funds authorized for combating malaria and all pox and Member Governments were urged to develop curative and preventive programmes against the treponematoses and make special efforts to improve health statistics

Technical discussions were held during the course of the Conference on the topics "Methods for improving the reliability of health statistical data required for health programmes" "Control of infant diarrhoeas in the light of recent scientific progress" and "Application of health education methods in rural areas in Latin America" Two subjects were selected for discussions to take place at the next meeting of the PASO Executive Council (seventh meeting of the WHO Regional Committee for the Americas) to be held in the autumn of 1955 in Washington D.C.—"Methods of improving the education of public health personnel" and "Medical care in rural areas"

The Fifteenth Pan American Sanitary Conference will be held in San Juan Puerto Rico in 1958

Disease-Control Project in Paraguay

WHO aid is being given in a demonstration project for the control of hookworm (ancylostomiasis) and smallpox in the Asunción Paraguarí area of Paraguay—an area comprising only 8% of the total land area of the country but containing 40% of the population Preliminary studies indicated that from 70% to 80% of the people of this area were infected with hookworm

One of the important aspects of this project is the improvement of environmental sanitation at the end of less than two years work 81% of the dwellings have been provided with adequate excreta disposal, compared with 55% before Other activities include smallpox vaccination, the administration of anthelmintic drugs and health education of the people

Environmental Sanitation Survey in Taiwan

A WHO consultant Mr W H Weir (USA) has been sent to make a preliminary survey and to recommend further action in an effort to improve environmental sanitation in Taiwan The Government is being assisted in this environmental sanitation programme by the Joint Commission on Rural Reconstruction and the Foreign Operations Administration of the USA as well as by WHO The Organization plans to send two public health engineers to participate in the work in 1955

Mr Weir is Director of Water Pollution Control of the Georgia State Department of Health and served in the Sanitary Corps of the United States Army during the Second World War He expects to be in Taiwan three months

Middle Eastern Countries Join to Combat Sylvatic Plague

Iran Iraq Syria and Turkey with aid from WHO are joining forces to try to control endemic sylvatic plague

As a first step WHO sponsored a conference which was held in Teheran from 20 October to 1 November This conference afforded an opportunity for participants from the above mentioned countries to exchange information and to explore the possibilities of a WHO-co-ordinated research and control programme They were particularly concerned with studying the situation in Kurdistan where sylvatic plague is endemic and where field activities are in progress

Control of sylvatic plague has thus far proved difficult in endemic areas which exist in California (USA) parts of South America, and most of Africa and Asia Many species of wild rodents—e.g. mice rats and wild squirrels—are potential carriers of the disease The danger lies in the possibility that human beings infected in rural endemic areas may carry sylvatic plague to urban centres, where the rodent population may become infected and start an epidemic

endorsed. A WHO regional budget for 1955 was approved for transmission to the Director General for his consideration. The WHO budget for 1956 was given to and special attention was given to and special efforts for combating malaria and other diseases and Member Governments were urged to develop curative and preventive programmes against the treponematoses and other diseases and special efforts to improve health.

Discussions were held during the Conference on the topics of: "Improving the reliability of health data required for health projects"; "Control of infant diarrhoeas in view of recent scientific progress"; and "Improvement of health education methods in Latin America". Two subjects were selected for discussions to take place at the next meeting of the PASO Council (seventh meeting of the Inter-American Committee for the Americas) scheduled in the autumn of 1955 in Washington D.C.—"Methods of improving the training of public health personnel" and "Improvement of health care in rural areas". The seventh Pan American Sanitary Conference will be held in San Juan, Puerto Rico, in 1958.

Hookworm Control Project in Paraguay

Aid is being given in a demonstration project for the control of hookworm (ancylostomiasis) and smallpox in the Asunción area of Paraguay—an area comprising only 8% of the total land area of the country but containing 40% of the population. Preliminary studies indicated that from 60 to 80% of the people of this area were infected with hookworm.

One of the important aspects of this project is the improvement of environmental sanitation. At the end of less than two years of work 81% of the dwellings have been improved with adequate excreta disposal compared with 55% before. Other activities include smallpox vaccination, the administration of antihelminthic drugs and health education of the people.

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Training Courses in Statistics Kabul and Beirut

A six week training course which was given in Kabul, Afghanistan, during September and October, enabled 38 statisticians from that country to receive intensive instruction in statistical methodology and analytical techniques and practices in vital and health statistics and to become familiar with the aims, programmes and statistical publications of various international agencies. The course was arranged by the Government of Afghanistan and WHO, with the collaboration of the United Nations.

The training which was of a practical nature included a field survey carried out in Kabul City by the participants in the course. This survey, based on modern sampling techniques and a house to house survey yielded much valuable information concerning the composition of the city's population, the amount and types of illness, and the birth and death rates. It was the first survey of its kind in Afghanistan.

The training course is expected to give new impetus to the development of Afghanistan's statistical system and to further the objective of international comparability of vital and health statistics.

In Beirut, Lebanon, the International Statistical Education Centre which was opened in February 1953 under the auspices of UNESCO, began its third term. The Centre which is under the direction of Mr Faiz El Khuri, former Regional Statistician for the WHO Office for the Eastern Mediterranean, has already trained 72 statistical officers from Egypt, Iran, Iraq, Jordan, Libya, Sudan, Syria, and Turkey.

Nursing Seminar in Istanbul

From 17 to 30 October, doctors and nurses from eleven countries⁴ assembled in Istanbul for a WHO Seminar on Team work in Nursing Services. This seminar was organized by the WHO Regional Office for

Europe in collaboration with the Government of Turkey.

Discussions at the seminar were largely on the subject of the relationship between hospital and public health nursing services with the intention of solving the problems of nursing relevant to the two services, of showing the interrelationship of their work, and of considering principles and practices of staff education and team work. Specifically attention was focused on the practical aspects of four major topics: (1) the need for nursing care of the individual, the family, and the community; (2) administration—factors involved in hospital and in public health services and the relation between the two; (3) needs, methods, and opportunities for improvement of staff education; and (4) team work—what it is and how it can be achieved.

By bringing together doctors and nurses associated with public health agencies and with hospitals, the seminar helped to define and to clarify the nursing needs of each of the two types of service and to show how closer co-operation between the two services might aid in utilizing to better advantage the existing resources in nursing personnel.

As in other WHO seminars, the emphasis was on active participation of all those present through small discussion groups, panel sessions and other means. In addition to attending lectures and taking part in discussions, the participants visited various health centres, hospitals and training institutions in Istanbul.

Meeting on Alcoholism

In October, the WHO Expert Committees on Mental Health and on Alcohol met in a joint session to consider, in particular, variation in drinking habits in different countries and the public health problems involved.

The chief distinction made was between countries in which beer and wine are the most common alcoholic beverages and those in which distilled spirits are more commonly consumed. While alcoholism is

⁴ Austria, Germany, Greece, Italy, Morocco, Portugal, Spain, Switzerland, Tunisia, Turkey and Yugoslavia.

nessarily less frequent in the former the latter the nature of the alcoholism results from each of these types of drinking varies accordingly in the case of beer-drinking there is less overt

but excessive consumption can lead to dependence upon alcohol i.e. an inability to stop drinking and to serious disturbances when distilled spirits are consumed in excess the effects are quite different and there appear the phenomena of "loss of control" (inability to regulate amount of alcohol ingested) and the so-called "blackout" (a type of amnesia)

from the public health viewpoint the drunkard is a problem regardless of the form of his excessive consumption of alcohol whether in the form of beer or wine or of distilled spirits not only does he himself suffer physical deterioration but also he is apt to be involved in industrial or traffic accidents be more prone to criminal behaviour and more susceptible to venereal disease and be responsible for numerous social and psychological problems within his circle of family and friends. The group recognized also the increasing number of problems arising from occasional excessive drinking which cannot be treated by any means as alcoholism

The report on the joint committee meeting for publication is authorized by the Executive Board and will appear in the *Technical Report*

The meeting was attended by Dr. Duchene, Medecin Chef du Service d'ophtalmologie mentale, Departement de la Sante Publique, Paris; Dr. H. Isbell, Director of the US Public Health Service Hospital, Lexington, Kentucky, USA; Dr. G. A. R. Sjöström, Chief Physician, Långbro Hospital, Stockholm; Mr. L. D. MacLeod, Director, Neurological Institute, Bristol; Dr. J. Mardones (Chairman), Professor of Pharmacology, Medical Faculty, University of Chile, Santiago; Professor Stachelin, University Psychiatric Clinic, Zurich, Switzerland; and Dr. H. M. Tiebout, Chief, Connecticut, USA. The Secretariat was represented by Dr. G. R. Harcourt, Chief Mental Health Section, Pro-

fessor E. M. Jellinek, Consultant on Alcoholism, and Dr. P. O. Wolff, former Chief, Addiction Producing Drugs Section.

Fifth Session of Insecticides Committee

The Expert Committee on Insecticides met for its fifth session in Maracay, Venezuela, from 2 to 11 September 1954. The Instituto de Malariologia de Venezuela played host to the committee for this meeting.

The chief subject of the committee's discussions was the chemistry of insecticides with the aim of amending previously established specifications and suggesting specifications for certain pesticides which are gaining in importance and for dusting powders, rodenticides and molluscicides. Studies made during the past two years were reviewed and particular attention was devoted to investigations on the development of an adequate test for the determination of the water-suspensibility of water-dispersible powders, the effect of tropical storage on insecticides, the sorption of insecticides on mudwall surfaces, the relationship of particle size of insecticides to their biological effectiveness and synergists in insecticide preparations.

Dr. R. A. E. Galley, Director, Colonial Products Laboratory, London, United Kingdom of Great Britain and Northern Ireland, was elected Chairman of the session and Dr. H. L. Haller (USA) and Dr. H. Mazzari (Venezuela) Vice Chairmen. Other members were Dr. A. W. A. Brown (Canada), Dr. R. Pal (India) and Dr. J. Treboux (Switzerland). Members of the Secretariat who were present were Mr. J. W. Wright (Secretary of the committee) and Mr. J. N. Lanoix, both of the Division of Environmental Sanitation. The committee's report if publication is authorized by the Executive Board will appear in 1955 in the *Technical Report Series*.

Meeting of Joint FAO/WHO Expert Committee on Nutrition

At its fourth session held in Geneva from 26 October to 2 November the Joint FAO/WHO Expert Committee on Nutrition

considered a number of problems which had been recommended for study at its second session, in 1951. These included anthropometry applied to nutrition and the importance of diet in relation to the incidence of degenerate diseases. Other subjects on the agenda were (1) calorie requirements concerning which the discussions were based on an expert committee (FAO) report published in 1949 (2) chemical additives to food a problem to which the Sixth World Health Assembly and the Executive Board had drawn attention, and (3) pellagra and goitre both of which have been under study by WHO in recent years. In addition to dealing with problems such as these the committee reviewed the nutrition programmes of WHO and FAO during the period 1951-54 and made suggestions for future work.

The members of the committee were Dr J Bengoa (Venezuela) Professor W J Darby (USA) Professor M J L Dols (Netherlands) Professor A. Keys (USA) Professor B S Platt (Chairman) (United Kingdom of Great Britain and Northern Ireland) Dr M V Radhakrishna Rao (India) Dr J Salcedo jr (Philippines), Dr H K Stuebeling (USA) Professeur E. F Terroine (France) and Dr N Wright (United Kingdom of Great Britain and Northern Ireland). Secretaries for this session were Dr W R. Aylroyd Director of the Nutrition Division of FAO and Dr R. C. Burgess Chief of the Nutrition Section of WHO.

The committee's report, if publication is authorized by the WHO Executive Board, will appear in the WHO *Technical Report Series*.

Mecca Pilgrimage

A recent supplement to the *Weekly Epidemiological Record* (1954 No 41 Supp 3) contains a summary report on the 1953 Mecca Pilgrimage (Year of the Hegira 1372). Information concerning the health conditions of pilgrims is given by country of origin for the journey to the Hedjaz, the arrival and sojourn in the Hedjaz, the Arafat and Mena days and the return journey. There were no epidemics and no cases of quarantinable diseases among the pilgrims or among the inhabitants of the region and the Ministry of Health of Saudi Arabia declared the Pilgrimage free from infection. A comparative statement of the number of returning pilgrims who landed at El Tor where there is a quarantine station during the 1951, 1952 and 1953 Pilgrimage seasons indicates an increase the totals being 28 057, 36 849 and 39 129 respectively.

The 1954 Pilgrimage (Year of the Hegira 1373) has, according to reports from the Eastern Mediterranean Region, also been declared free from infection. Improved health facilities and the application of modern prophylaxis have greatly changed the health situation of the Mecca pilgrims and of the inhabitants of the region where between 1831 and 1912, forty serious epidemics of plague, dysentery, typhoid, and cholera were recorded during Pilgrimage seasons.
